

## ***SECTION 3.0***

---

### ***ENVIRONMENTAL ANALYSIS***

# CHAPTER 3.0

---

## ENVIRONMENTAL ANALYSIS

### 3.1 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS

**Chapter 3.0** of this Draft Environmental Impact Report (DEIR) contains individual sections that describe the potential environmental impacts of the Proposed Project. Each topical section describes the existing setting and background information necessary to help the reader understand the conditions that would cause an impact to occur. In addition, each section includes a description of how an impact is determined to be significant or not significant. Finally, the individual sections recommend mitigation measures to reduce significant impacts.

#### 3.1.1 SCOPE OF THE ENVIRONMENTAL ANALYSIS

As discussed in **Section 1.7**, the environmental issue areas addressed in this Draft EIR are focused to those areas that have been identified through the CEQA process as having the potential for significant effects to the environment. As such, **Sections 3.2** through **3.8** in this DEIR provide an integrated presentation of the environmental setting, environmental impacts, and proposed mitigation measures for the following environmental issue areas:

- Geological Resources
- Water Resources
- Biological Resources
- Cultural Resources
- Noise
- Transportation / Circulation
- Air Quality

#### 3.1.2 SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

Whenever possible and reasonable, significance criteria are established which serve as the benchmark for determining impacts. Significance criteria are identified for each environmental category to determine if the project will result in a significant environmental impact when evaluated against the environmental setting. The significance criteria vary depending on the environmental category. For example, the significance criterion for carbon monoxide in the air quality discussion is based on state and federally adopted parts per million (ppm) standards, while the noise significance criteria is based on decibel thresholds identified in the Sonoma County General Plan (General Plan). In general, effects can be either

significant (above threshold) or less than significant (below threshold). Effects found to be significant may be reduced to less than significant levels with the identification of feasible mitigation measures.

### 3.1.3 MITIGATION MEASURES

Mitigation measures identified in this report are characterized in one of three categories:

- 1) Measures necessary to reduce the identified impact below a level of significance;
- 2) Measures recommended to reduce the magnitude of a significant impact, but not likely to do so below a level of significance; and
- 3) Measures recommended to reduce the magnitude of a less than significant impact.

Where implementation of more than one mitigation measure is needed to reduce an impact below a level of significance, this fact is noted. Unless stated otherwise, where multiple mitigation measures are listed, all are necessary to mitigate an impact.

### 3.1.4 CUMULATIVE IMPACTS

According to the California Environmental Quality Act (CEQA) *Guidelines* Section 15355, “cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” CEQA requires that cumulative impacts be discussed when the project’s incremental effect is cumulatively considerable (*Guidelines* Section 15130(a)). These impacts are referenced where appropriate in the relevant sub-chapters by topic, and are also summarized in **Section 4.2**.

### 3.1.5 UNAVOIDABLE IMPACTS

An unavoidable impact is an impact that cannot be feasibly mitigated to a less than significant level. In each environmental section and **Section 4.3**, impacts that cannot be avoided are identified as *significant unavoidable impacts*.

### 3.1.6 SOCIOECONOMIC IMPACTS

In accordance with CEQA, this document focuses on potentially significant environmental consequences. Although there may be socioeconomic consequences regarding the Proposed Project and alternatives, many of these issues relate to socioeconomic concerns that do not clearly result in a physical impact. CEQA *Guidelines* Section 15131 states that an EIR may include economic or social information; however, “economic and social effects of a project shall not be treated as significant effects on the environment.” An exception to this is in instances where a clear chain of cause and effect between the social or economic issues can be linked to a physical impact. In this case, the DEIR discusses the physical impact that will result from the social or economic impact.

## 3.2 GEOLOGICAL RESOURCES

### 3.2.1 INTRODUCTION

This section addresses the potential for the Proposed Project to cause impacts related to geological resources. Following an overview of the geological setting in **Subsection 3.2.2** and the relevant regulatory setting in **Subsection 3.2.3**, while project-related impacts and recommended mitigation measures are presented in **Subsection 3.2.4**.

### 3.2.2 GEOLOGICAL RESOURCES SETTING

#### *TOPOGRAPHY*

The project site is located within the Russian River watershed as it winds through the Coastal Range. The elevation of the Russian River gradually declines until it reaches the Pacific Ocean at the town of Jenner. The topography of the project area is typical of the Coastal Range characterized by northwest-southwest trending ridges and distinct valleys. The project site is located at the southern base of Neeley Hill (elevation 800' above mean sea level) on land sloping north to south towards the Russian River.

#### *GEOLOGY*

The project area is underlain primarily by the Franciscan and Merced formations. The Franciscan formation underlies the Russian River basin. It is a heterogeneous<sup>1</sup> mass of sedimentary, volcanic, and metamorphic rocks, and is highly fractured and deformed by folding, faulting, and metamorphism<sup>2</sup>. The Franciscan formation is generally highly unstable, due largely to the presence of small to very large faults and shear zones<sup>3</sup>. It contains shale inter-bedded with more massive rocks, and serpentinite is common. It is widely unstable and erodible, resulting in common landslides, stream bank erosion, and soil creep. The Franciscan formation formed in the Jurassic-Cretaceous age approximately 60 to 150 million years ago (CGS, 2006a). Many ridges in western Sonoma County, including the project site, are underlain by the Merced formation. This formation consists of coarse to fine marine sediment containing areas of clay, pebbles, and shells. The Merced Formation overlays the Franciscan formation and was created in the Pliocene to early Pleistocene around 1.2 to 1.6 million years ago (Clifton et al., 1987).

#### *SOILS*

Soil types occurring in the vicinity of the project area include lowland sediments and mountainous bedrock-derived soils. These soils were developed from unconsolidated alluvium of sedimentary and volcanic materials deposited in valleys and along the shores. The soil characteristics of the area vary

<sup>1</sup> Heterogeneous refers to a varied composition or mixture of elements.

<sup>2</sup> Metamorphism is the process by which pressure and temperature alter the mineral content, chemical composition, and structure of solid rock.

<sup>3</sup> A shear zone is an area of weakness, similar to a fault, but consisting of several parallel displacement zones usually over a greater width than a single fault.



from excessively drained to poorly drained, slight to moderate erosion hazard, and slow to medium runoff rates.

Soil on the project site is comprised exclusively of Yolo Sandy Loam, part of the Yolo series of soils (**Figure 3.2-1**). The Yolo series are classified in the fine-silty, mixed, nonacid, thermic family of Entisols (young soils created from deposition of sediment-laden water). The Yolo series is distributed throughout the Sacramento Valley, central California, and the valleys of the California Coast Range. The project site is classified as hydrologic soil group B, based on estimates of runoff potential. Group B soils are moderately deep to deep and are moderately well-drained to well-drained due to moderate infiltration rates when thoroughly wet. These soils have a moderate rate of water transmission. The erosion potential for the soil on the project site is classified as having a slight erosion hazard, the lowest rating available under ordinary climatic conditions (USDA, 2006).

Test borings of soils underlying the project footprint indicates low to moderate strength to a depth of approximately 30 feet below ground surface. Consolidation testing indicates that the soils would be subject to significant settlement under the stress of new loads or fills. Furthermore, organic debris was observed in several of the test borings with depths up to 20 feet (Giblin Associates, 2006).

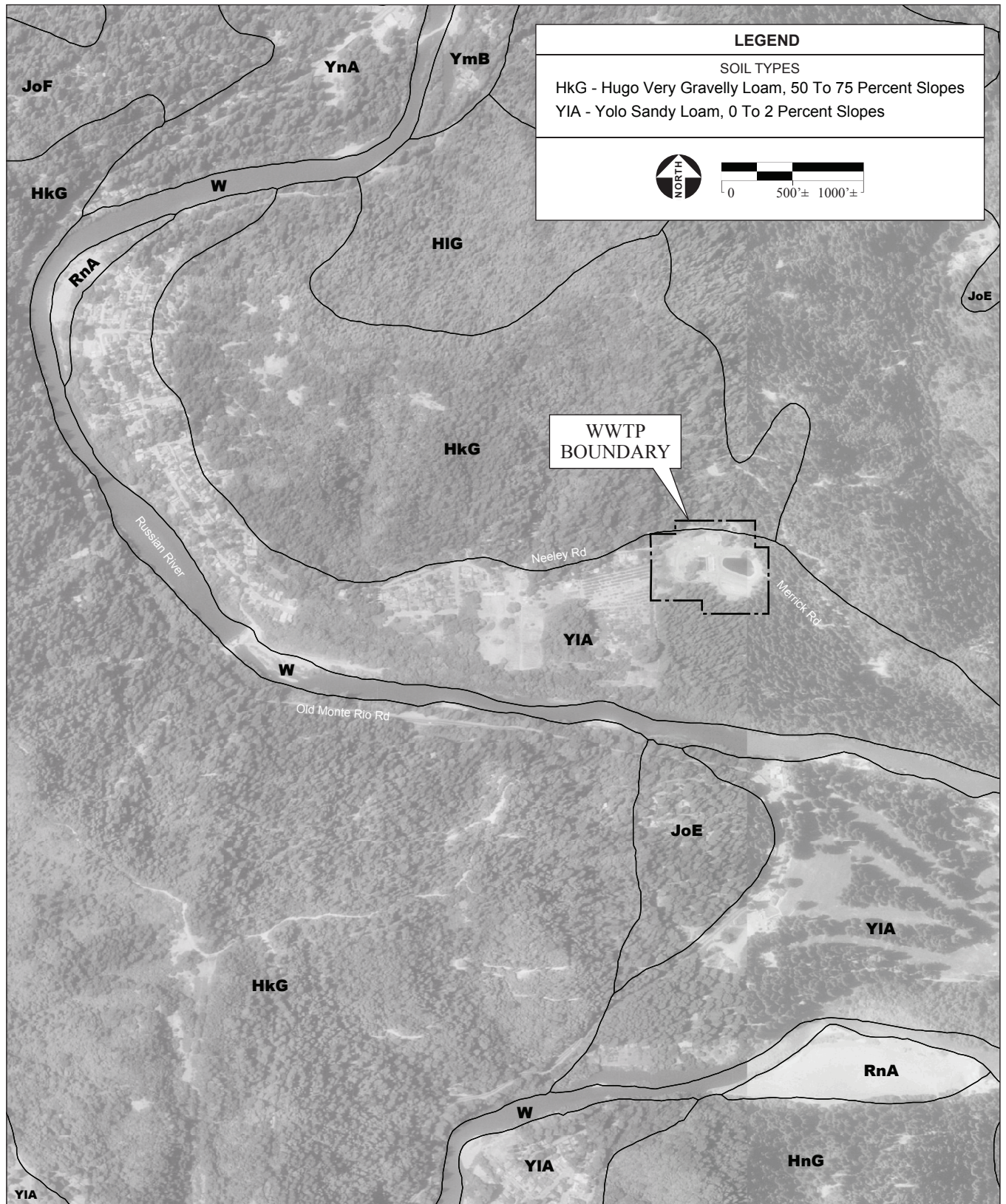
## ***SEISMICITY***

### ***Regional Faults***

The Coastal Range was created by fault activity and is a seismically active area. According to California Geological Survey (CGS) maps, the closest potentially active (Quaternary) fault zones as defined by the Alquist-Priolo Act (summarized below) to the project site are the San Andreas, approximately 8.5 miles southwest, and the Healdsburg, approximately 12 miles northeast (**Figure 3.2-2**). The closest faults within those zones are the Class A San Andreas-North Coast South fault and the Rodgers Creek fault as well as the Class B Maacama-South fault. Class A faults have a slip rate of greater than 5 millimeters per year (mm/yr). All other faults with a slip rate of less than 5mm/yr are Class B faults (Cao et al., 2003). The Rodgers Creek and Maacama-South faults are part of the Healdsburg Fault Zone that run parallel to the east of the coastal ranges. According to the Public Safety Element of the Sonoma County General Plan (General Plan) for the Russian River Area, there is a local fault located seven miles east of the project site. This fault is not identified on CGS fault maps. The actual project site is not located within an Alquist-Priolo Earthquake Fault Zone or in a Seismic Hazard Zone as defined by the Seismic Hazards Mapping Act (summarized below).

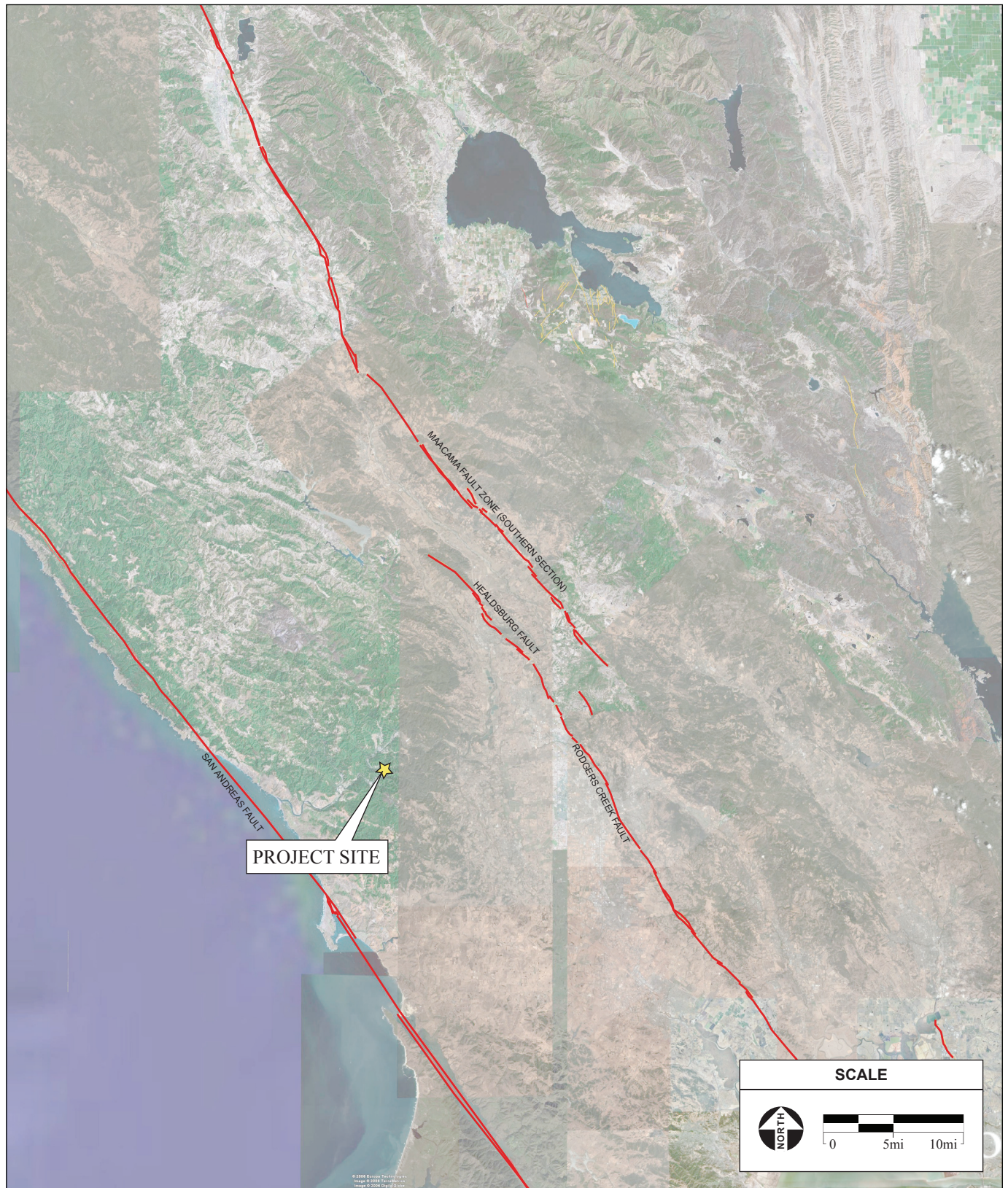
### ***Shaking Intensity***

Shaking intensity at a particular site can vary depending on the overall magnitude, distance to the fault epicenter, focus of earthquake energy, and type of geologic material. The Modified Mercalli intensity (MMI) scale is commonly used to measure earthquake effects due to ground shaking. The MMI values



**Figure 3.2-1**  
Soil Types





**Figure 3.2-2**  
Fault Zones

**TABLE 3.2-1**  
MODIFIED MERCALLI INTENSITY SCALE

<b>Intensity Value</b>	<b>Intensity Description</b>	<b>Average Peak Acceleration</b>
I.	Not felt except by a very few persons under especially favorable circumstances.	< 0.0015g
II.	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	< 0.0015g
III.	Felt quite noticeably indoors, especially on upper floors of buildings, but many persons do not recognize it as an earthquake. Standing cars may rock slightly. Vibration similar to the passing of a truck. Duration estimated.	< 0.0015g
IV.	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.	0.015g-0.02g
V.	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbances of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.	0.03g-0.04g
VI.	Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.	0.06g-0.07g
VII.	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving cars.	0.10g-0.15g
VIII.	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Persons driving cars disturbed.	0.25g-0.30g
IX.	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.	0.50g-0.55g
X.	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 0.60g
XI.	Few, if any, masonry structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 0.60g
XII.	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 0.60g

Note: <sup>a</sup> g is gravity = 9.8 meters per second squared.

Source: Bolt, 1988.

for intensity range from I (earthquake not felt) to XII (damage nearly total) (**Table 3.2-1**). MMI's ranging from IV to X could cause moderate to significant structural damage (CGS, 2006b).

The CGS creates models of seismic hazard based on the physical and mechanical properties of the Earth's crust. Based on these models, the CGS determines the peak horizontal ground acceleration, the fastest measured change in speed for a particle at ground level. When there is an earthquake, the forces caused by the shaking are measured as percent *g*, when *g* is the acceleration due to gravity, or 9.8 meters/second<sup>2</sup> (CGS, 2006c). The project site is within an area with a 10 percent chance that, in a 50-year period, an earthquake will create peak ground acceleration of 0.4*g* or greater, or 40% of *g* (CGS, 2006c). This corresponds to a modified MMI above VIII but below IX and the corresponding damage potential (**Table 3.2-1**).

### *Liquefaction*

When subjected to energy associated with the shaking intensity of a considerably sized earthquake (MMI VIII and above), certain soils when saturated with water may lose their solid structure and act as liquids. Ground subject to liquefaction may sink or pull apart. Soils comprised of sand and sandy loams, in areas with high groundwater tables or rainfall, are subject to liquefaction during intense seismic shaking events. According to the Association of Bay Area Governments (ABAG), the project site has a very high potential for liquefaction to occur during these strong seismic events. Test borings of the soil underlying the project footprint substantiated this classification of the site. The test borings indicated loose, sandy soils are located underneath the project footprint, and groundwater was encountered at 7 feet below ground surface (Giblin Associates, 2006).

### **LANDSLIDES**

Landslides occur in Sonoma County during episodes of high-intensity, long-duration rain events in areas that have steep slopes, and weak soils devoid of vegetation. Due to the weak and deformed nature of the Franciscan rocks in the project area; the Coast Range is prone to deep weathering and development of thick overlying soils. These thick soils create excess weight, especially when wet, and are prone to landslides. In 1998, a substantial landslide destroyed several homes and forced the evacuation of 130 homes in Rio Nido, which is located approximately 3 miles northeast of the District's treatment plant. In the same year, a mudslide originating on private property north of the WWTP deposited approximately 175 cubic yards of mud and debris within the WWTP property. This mudslide was caused by the large flood event discussed in **Section 2.4** that forced the District to discharge untreated wastewater to the Russian River, resulting in Cease and Desist Order 98-57. The District has evaluated the area where the landslide occurred for potential damage and constructed a small retaining wall to shield the facilities from future potential debris flows (HDR, 2005). This area is located on the western side of the WWTP, north of the proposed location for the equalization basin.



### 3.2.3 REGULATORY SETTING

#### *FEDERAL*

##### *Soil and Water Resources Conservation Act*

The Soil and Water Resources Conservation Act (SWRCA) directs the Secretary of Agriculture to develop, in cooperation with state and national organizations and the public, a national soil and water conservation program (16 USC 2001-2009). This program is a guide for the Secretary in assisting landowners and land users, at their request, in soil and water conservation on private and non-federal lands. Programs administered by the Secretary of Agriculture for the conservation of soil, water and related resources must be responsive to the long-term needs of the U.S. A key component of this bill is that the Department of Agriculture possess information, technical expertise and a delivery system for providing assistance to land users with respect to conservation and use of soils, plants, woodlands, watershed protection and flood prevention, water use and conservation, animal husbandry, fish and wildlife management, recreation, community development, and related resource uses. Officials must use information and data available from other federal, state and local governments, and private organizations, and must coordinate activities with the resource appraisal and planning efforts of other federal agencies to avoid unnecessary duplication and overlap of planning and program efforts. This information provides the foundation for the National Resource Conservation Service to provide public data including soil maps. Soil maps, such as those discussed above in **Section 3.2.2**, are used to determine soil associations on project sites, which assist in the impact analysis.

##### *The National Earthquake Hazards Reduction Program*

The National Earthquake Hazards Reduction Program (NEHRP) is the Federal Government's coordinated approach to addressing earthquake risks. Congress established the program in 1977 (Public Law 95-124) as a long-term nationwide program to reduce the risks to life and property in the United States resulting from earthquakes. The NEHRP is managed as a collaborative effort among the Federal Emergency Management Agency (FEMA), the National Institutes of Standards and Technology, the National Science Foundation, and the USGS.

The four goals of the NEHRP are:

1. Develop effective practices and policies for earthquake loss-reduction and accelerate their implementation.
2. Improve techniques to reduce seismic vulnerability of facilities and systems.
3. Improve seismic hazards identification and risk-assessment methods and their use.
4. Improve the understanding of earthquakes and their effects.

The NEHRP has been active in efforts to design buildings that will withstand high intensity earthquakes and in outreach work to improve public and professional awareness of new plans. It also has been involved in the development of earthquake codes for building codes, including the national Universal

Building Code (UBC) and the International Building Code. The USGS, in coordination with the NEHRP, also maps the location of faults within the U.S. and creates models of shaking hazards. These maps are used during the environmental review process to assess the potential impact of development projects. As discussed in **Section 3.2.2**, the project site is located in an area designated as moderate for seismic shaking hazards. The impact analysis associated with this hazard is provided below in **Section 3.2.4**.

### ***STATE***

#### ***Alquist-Priolo Earthquake Fault Zoning Act***

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act), signed into law December 1972, requires the delineation of zones along active and potentially active faults in California. The CGS defines an “active” fault as one that exhibits evidence of activity during the Holocene Era (about the last 11,000 years). Faults that exhibit evidence of Quaternary activity (within the last 1.6 million years) are considered to be “potentially active.” The purpose of the Alquist-Priolo Act is to regulate development on or near fault traces to reduce the hazard of fault rupture and to prohibit the location of most structures for human occupancy across these traces. Cities and counties must regulate certain development projects within the zones, which include withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement. The project site is not located within a designated fault rupture zone.

#### ***Seismic Hazards Mapping Act***

The Seismic Hazards Mapping Act was developed in 1991 to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design. Information on seismic hazards may be obtained from the CGS. Ground shaking probability maps have been developed in conjunction with the USGS for all of California. The project site is located in an area with recognized seismic hazards such as liquefaction, landslides, and strong ground shaking. In accordance with the Act, a geotechnical investigation must be conducted and appropriate mitigation incorporated into the project design, prior to construction of the Proposed Project. The impact analysis associated with this hazard is provided below in **Section 3.2.4**

#### ***California Building Code***

Published by the International Conference of Building Officials, the Uniform Building Code (UBC) is a widely adopted model building code in the United States. The California Building Code (CBC) incorporates by reference the UBC with necessary California amendments. The California Building Standards Commission (CBSC), an independent commission within the state of California, creates the

CBC. These building codes serve as the basis for the design and construction of buildings in California. The CBSC produces the CBC as part of Title 24, Part 2 of the California Code of Regulations. The CBC includes provisions for designing buildings to withstand earthquakes. About one-third of the text within the CBC has been tailored for California earthquake conditions. It also requires that constructors identify soil and geologic conditions at the site. If conditions are found that may interfere with the stability of the building, the CBC includes specific building requirements for those conditions.

### ***LOCAL***

#### ***Sonoma County General Plan***

The Sonoma County General Plan (General Plan) outlines geological resource policies within the Public Safety Element that regulate development within the General Plan planning area, which includes the project site. Policies that may relate to the Proposed Project include:

#### ***Public Safety Policies***

- Policy PS-1a** Continue to utilize all available data on geologic hazards and related risks from the appropriate agencies.
- Policy PS-1b** Continue to utilize studies of geologic hazards prepared during the development review process.
- Policy PS-1f** Require and review geological reports prior to decisions on any projects which would subject property or persons to significant risks from the geological hazards shown on Figures PS-1a through PS-1i and related file maps and source documents. Geologic reports shall describe the hazards and include mitigation measures to reduce risks to acceptable levels. Where appropriate, require an engineer's or geologist's certification that risks have been mitigated to an acceptable level and, if indicated, obtain indemnification or insurance from the engineer, geologist, or developer to minimize County exposure to liability.
- Policy PS-1k** Roads, public facilities and other County projects should incorporate measures to mitigate identified geologic hazards to acceptable levels.

Sonoma County is currently in the process of updating its General Plan. The planning horizon of the proposed Draft General Plan would extend to the year 2020. In January 2006, the County released a Public Hearing Draft of the General Plan 2020. The following new policy is proposed within the General Plan 2020 update that would relate to geology and soils:

#### ***Public Safety Policies***

- Policy PS-11** Use the following criteria in siting and design of essential service building and facilities, particularly those of high public occupancy:



- (1) To the extent feasible, avoid siting such building and facilities in areas subject to an MMI Groundshaking Intensity Level of Very Violent, Violent, or Very Strong as shown on Figures PS-1a through PS-1i.

Where such building and facilities must be located in the above areas, design and construct them to the highest feasible safety standard.

### 3.2.4 IMPACTS AND MITIGATION MEASURES

#### *SIGNIFICANCE CRITERIA*

The significance criteria listed below are utilized to determine the magnitude of soils, geology, and seismicity impacts. Impacts are considered significant if the Proposed Project would expose people or structures to potential substantial adverse effects; including the risk of loss, injury, or death involving:

- Rupture of a known earthquake fault delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map;
- Strong seismic ground shaking intensity;
- Ground failure, including liquefaction, as a result of strong seismic ground shaking; and/or
- Landslides from seismic events;

Furthermore, impacts would be considered significant if the Proposed Project would:

- Cause or result in substantial soil erosion or loss of topsoil;
- Be located on a geological resource or soil that is unstable or would become unstable as a result of the Proposed Project, and potentially result in onsite or off-site landslides, lateral spreading, subsidence, liquefaction or collapse; and/or
- Be located on expansive soil, as defined by the UBC, creating substantial risk to life or property.

#### *ANALYSIS METHODOLOGY*

This section identifies the Proposed Project's impacts on geologic resources and hazards created by siting structures near or on geologic hazards. Impacts to and from geological resources were analyzed based on an examination of the project site, published information regarding geological hazards of the project area, field studies, and comparisons of these factors to the significance criteria listed above. If significant impacts are likely to occur, mitigation measures are included to increase the compatibility and safety of the Proposed Project and reduce impacts to less-than-significant levels. Impacts associated with significance criteria that were determined to be less than significant in the Initial Study (**Appendix A**) do not warrant further analysis in accordance with CEQA guidelines, and are not discussed within this EIR.

---

**IMPACT STATEMENTS AND MITIGATION MEASURES****Impact**

- 3.2-1 Construction and excavation activities associated with the Proposed Project could result in soil erosion, which could adversely impact nearby waterways as a result of siltation and water quality degradation. Less than Significant.**

Soils within the project area have a low to moderate potential for erosion, and slopes on the project site are less than 1 percent. The greatest chance of impacts from erosion occurs during grading and construction activities, when groundcover is removed. During this time, soil erosion may cause a significant impact to the Russian River, located 0.25 miles south of the project site, due to siltation or degradation of water quality. However, conditions on the project site increase permeability and reduce the chance of erosion. Furthermore, erosion control measures are an integral component of the Storm Water Pollution Prevention Plan (SWPPP) required under the Clean Water Act's National Pollution Discharge Elimination System (NPDES) permit required for construction sites disturbing over 1-acre of soil. The NPDES permit and measures implemented in response to the permit requirements are discussed in **Section 3.3, Water Resources**. With the implementation of the Best Management Practices (BMPs) outlined within the SWPPP for the construction sites, impacts of the implementation of the Proposed Project on soil erosion would be *less than significant*.

**Mitigation Measure**

None required.

**Impact**

- 3.2-2 Implementation of the Proposed Project would expose structures to seismic hazards and geologic resources that may be adversely impacted by seismic events. Less than Significant.**

*Surface Rupture*

The project site is more than 8 miles from the nearest active fault identified in conjunction with the Alquist-Priolo Earthquake Fault Zoning Act. The Proposed Project is thus unlikely to be affected by surface rupture and would not increase risks of surface fault rupture. This impact is *less than significant*.

*Seismic Ground Shaking and Ground Failure*

The project could be subject to adverse effects from seismic events. Numerous active and potentially active faults are within 20 miles of the project site. Movement along one or more of these faults is likely to create ground shaking on the project site. In a 50-year period, USGS models of seismic hazard predict a 10 percent chance of ground shaking to be greater than 0.4g.

As noted in **Section 3.2.2**, the soil underlying the project footprint has the potential to experience liquefaction during episodes of significant seismic ground shaking intensity.

However, the equalization basin has been designed to withstand the effects of expected seismic events. As discussed in **Section 2.7.1**, the Proposed Project would install an impact intermediate foundation system. These systems improve structural performance during seismic events over conventional foundation methods. Furthermore, the system acts as a deep ground treatment reducing the potential for liquefaction during seismic events. Additionally, as a standard measure discussed in **Section 2.7.4**, an emergency response plan would be developed that would identify standard procedures in the event of a seismic event causing substantial damage to the equalization basin. Through project design elements that would improve structural performance during seismic events and the preparation of an emergency plan, potential impacts associated with failure of the equalization basin would be considered *less than significant*.

#### *Landslides*

Although the project site is surrounded by an area with the potential for landslides, the District has evaluated the site for potential damage from landslides and constructed a retaining wall designed to shield the facilities from potential debris flows originating from the same area as the 1998 landslide. This impact is *less than significant*.

#### **Mitigation Measure**

None required.

#### **Impact**

##### **3.2-3 Development of the Proposed Project would be located on unstable soil, which could result in soil collapse causing failure of the equalization basin. Less than Significant.**

As noted in **Section 3.2.2**, field investigations indicated soil strengths ranging from low to moderate to a depth of approximately 30 feet below ground surface. Consolidation testing indicated the soils would be subject to significant settlement under the stress of new loads or fills, such as the 29-foot embankment of the equalization basin. However, the use of the impact intermediate foundation system, as noted in **Section 2.7.1**, would stabilize the soil, provide support for the basin, and prevent soil collapse. Therefore, this impact is *less than significant*.

#### **Mitigation Measure**

None required.

## 3.3 WATER RESOURCES

### 3.3.1 INTRODUCTION

This section addresses the potential for the Proposed Project to cause impacts related to water resources. Following an overview of the water resource setting in **Subsection 3.3.2** and the relevant regulatory setting in **Subsection 3.3.3**, project-related impacts and recommended mitigation measures are presented in **Subsection 3.3.4**.

### 3.3.2 ENVIRONMENTAL SETTING

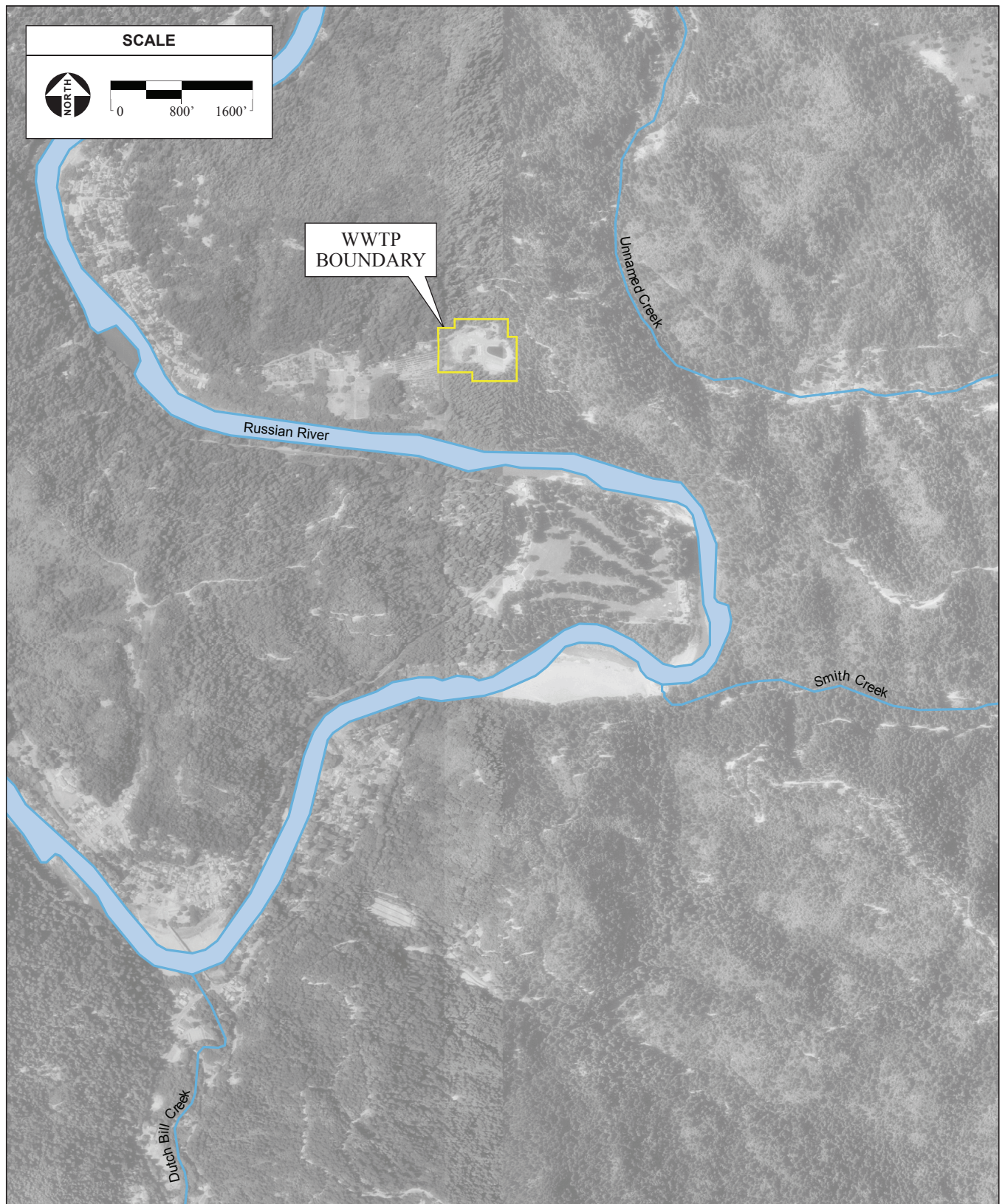
#### *SURFACE WATER FEATURES*

The project site is located within the North Coast region that is divided into two natural drainage basins, the Klamath River Basin and the North Coastal Basin. The North Coastal Basin covers an area of 8,560 square miles including northern Sonoma County. A majority of the basin is covered with rugged coastal forests and consists of mountains dissected by six major river systems including the Russian River. The Russian River watershed covers approximately 1,485 square miles and originates in Mendocino County, approximately 15 miles north of Ukiah (Sonoma County, 2006). The Russian River originates in Mendocino County flowing south past Ukiah and into Sonoma County. It then flows through Healdsburg and west through Guerneville, passing 0.25 miles to the south of the District's WWTP. The river ultimately travels southwest declining in elevation until it reaches the Pacific Ocean at Jenner approximately 20 miles west of Santa Rosa. Flow within the Russian River is regulated by releases from Coyote Valley Dam, which creates Lake Mendocino, and the Warm Springs Dam, which creates Lake Sonoma. The State Water Resources Control Board (SWRCB) established minimum stream flows by Decision 1610 in 1986. The WWTP is located within the lower Russian River Subbasin (SCWA, 2004b). **Figure 3.3-1** provides an aerial view of the Russian River and nearby creeks located within the project area.

#### *STORM DRAINAGE SYSTEM*

During the wet season in the North Coast Basin (November through May), runoff generated during rain events contributes most of the flow to the Russian River. Precipitation in the region averages approximately 30 inches per year (1931 to 2005) (Western Regional Climate Center, 2006). However, areas in the immediate vicinity of the WWTP, such as the town of Cazadero, record an average of 75 inches annually. The average annual precipitation received in Guerneville is recorded as 50 inches (Worldclimate, 2006). To accommodate the runoff generated during rain events, there are two constructed drainages within the WWTP property. Both drainages originate off-site and enter the facility from the north. One of the drainages is located in the eastern half of the facility along the tree line, while the other is located just west of the operations building (HDR, 2005). Both drainages travel south through the project site and terminate at the wetland located in the forested area in the southeast portion of the





SOURCE: USGS Aerial Photograph, 7/13/1993; AES, 2006

Russian River Basin Storage Project EIR / 205554 ■

**Figure 3.3-1**  
Water Resources

project site. The western drainage qualifies as “Waters of the U.S.” under Section 404 of the Clean Water Act. Both drainages and the wetland are further addressed in **Section 3.5.2**.

### ***SURFACE WATER QUALITY***

The lower Russian River is listed on California’s 303(d) list of impaired water bodies. The lower Russian River is listed as a medium priority for sedimentation/siltation and low priority for temperature. The increase in sedimentation and temperature is attributed to historic grazing, agriculture, logging, road construction, and habitat modification (Sonoma County, 2006). The SWRCB process of developing Total Maximum Daily Loads (TMDLs), which specify the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, has not yet been started for the lower Russian River. Refer to the discussion of the Clean Water Act in **Section 3.3.3** for further details on this topic.

In 2004, the U.S. Geological Survey, in cooperation with the Sonoma County Water Agency, conducted extensive water quality testing of the Russian River, including the lower reaches. As part of the study, water quality samples were collected from Johnson’s Beach in Guerneville and Vacation Beach, northwest of the project site. Two samplings were collected at each location between late August and mid-September in 2004. The average results of these measurements are presented in **Table 3.3-1** and are compared to the corresponding water quality objective outlined in the Basin Plan developed by the North Coast Regional Water Quality Control Board (NCRWQCB). As can be seen in the table, the water quality samples taken in 2004 from both Johnson’s Beach and Vacation Beach are consistent with the water quality objectives included in the Basin Plan for each measured contaminant.

**TABLE 3.3-1**  
LOWER RUSSIAN RIVER WATER QUALITY TESTING RESULTS

<b>Contaminant</b>	<b>Johnson’s Beach</b>	<b>Vacation Beach</b>	<b>Basin Plan Objective</b>
Specific Conductance ( $\mu$ S/cm)	233.5	233.5	375
TDS <sup>1</sup> (mg/l)	137	140	200
Dissolved Oxygen (mg/l)	8.6	8.2	7.0 (min) <sup>2</sup>
pH	8	7.8	6.5-8.5

NOTES: <sup>1</sup>TDS= Total dissolved solids; <sup>2</sup>Minimum dissolved oxygen water quality objective  
SOURCE: USGS, 2006

### **GROUNDWATER**

In Sonoma County, rivers and streams provide the majority of groundwater recharge. The majority of Sonoma County is underlain by hard bedrock with low porosity, and groundwater is confined to large fractures in the rock. The capability to provide groundwater for municipal uses in these areas depends upon the degree and extent of rock fracturing as well as the connectivity of fractures with each other and recharge areas (Sonoma County, 2006). Sonoma County has eleven separate groundwater basins. Each basin is classified by a tiered system depending on the general groundwater availability in each area:

<b>Tier I</b>	Major groundwater basins with adequate supply and sufficient recharge
<b>Tier II</b>	Groundwater basins with natural recharge areas
<b>Tier III</b>	Groundwater basins with marginal groundwater availability
<b>Tier IV</b>	Groundwater basins with low or highly variable water yield

The WWTP is located within the Lower Russian River Valley groundwater basin. The basin is long and narrow, meandering through the Russian River corridor, and is comprised of alluvium, ancient river terrace deposits, and river-channel deposits of Holocene age. Most wells in the groundwater basin produce high yields. The areas in this basin along the river valley have high yields and are considered Tier I areas, while basin areas in the mountains adjacent to the river are classified as Tier IV.

Groundwater levels in the area depend upon the proximity and elevation compared to the Russian River. Groundwater on the project site has been observed at a depth of approximately 5 to 13.5 feet below existing grade. Groundwater elevation has been observed between 41 feet to 52.6 feet above mean sea level (amsl) (HDR, 2005).

### **FLOODING**

Floods within the Russian River watershed generally last approximately three to four days, developing within 24-48 hours of a major storm event. The flood event usually recedes within two or three days after the end of the storm. Often, the smaller tributaries of the Russian River flood within six hours after the onset of a major storm event, before flooding of the Russian River, itself, occurs. Although flood frequency and base flood elevations have been reduced along some parts of the Russian River by the construction and operation of Coyote Valley Dam and Warm Springs Dam, repetitive major flood events still persist in Guerneville (Sonoma County, 2006).

FEMA oversees the delineation of flood zones and the provision of federal disaster assistance. FEMA manages the National Flood Insurance Program (NFIP) and publishes the Flood Insurance Rate Maps (FIRMs), which show the expected frequency and severity of flooding by area, typically for the existing land use and type of drainage/flood control facilities present. The WWTP is located outside of the 100-year flood plain according to the latest FEMA map and is not subject to flooding by the Russian River (**Figure 3.3-2**). However, several high duration storms and flood events have significantly affected the amount of effluent flow directed to the WWTP, forcing discharge of untreated wastewater to the Russian







River. These past events have resulted in violations of the District's NPDES permit, as discussed in Section 2.0.

### 3.3.3 REGULATORY SETTING

#### *FEDERAL*

##### *Clean Water Act*

The Clean Water Act (CWA) (33 USC 1251-1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Important sections of the Act are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines. Section 303(d) requires States to identify impaired water bodies and develop total maximum daily loads (TMDLs) for contaminants of concern. A TMDL specifies the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and allocates pollutant loadings among point and nonpoint pollutant sources. As noted above, the Russian River is listed on the 303(d) list for sediment, however TMDLs for the lower Russian River have not yet been developed.
- Section 401 (Water Quality Certification) requires applicants for any federal permit that proposes an activity that may result in a discharge to waters of the U. S., to obtain certification from the state where the discharge will occur, to comply with other provisions of the Act.
- Section 402 establishes the NPDES, a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permit program is administered by the SWRCB.
- Section 404 establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is jointly administered by the U.S. Army Corps of Engineers (USACE) and the EPA.

##### *Anti-degradation Policy*

Federal policy (40 CFR 131.6) specifies that each state must develop, adopt, and retain an anti-degradation policy to protect the minimum level of surface water quality necessary to support existing uses. Each state must also develop procedures to implement the anti-degradation policy through water quality management processes. Each State anti-degradation program shall include policy and implementation methods consistent with the provisions outlined in 40 CFR 131.12 (*US EPA Water Quality Standards Handbook, Second Edition August 1994*).

### ***Flood Control Management***

Sonoma County is a participant in the NFIP, a federal program administered by FEMA. NFIP participants must satisfy certain mandated floodplain management criteria. The National Flood Insurance Act of 1968 adopted a desired level of protection that would protect developments from floodwater damage associated with an Intermediate Regional Flood (IRF), which is defined as a flood having an average frequency of occurrence on the order of once in 100 years, although such a flood may occur in any given year.

### ***STATE***

#### ***Porter-Cologne Water Quality Control Act***

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides the basis for surface water and groundwater quality regulation within California. The Act established the authority of the SWRCB and the nine Regional Water Quality Control Boards (RWQCBs). The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCBs conduct planning, permitting, and enforcement activities within their designated region.

The act requires the state, through the SWRCB and the RWQCBs, to designate beneficial uses of surface waters and groundwaters and to specify water quality objectives designed to protect those uses. Beneficial uses are the desired resources, services, and qualities of the aquatic system that are supported by achieving and protecting high water quality. Beneficial uses are specific to the water body and can vary from water body to water body. Where beneficial uses have not been assigned to a specific water body, the tributary rule applies. The tributary rule applies the beneficial uses of the nearest downstream water body. These water quality objectives are presented in the *Regional Water Quality Control Plans* (Basin Plans).

Anyone who is discharging waste or proposing to discharge waste that could affect the quality of the state's waters must file a "report of waste discharge" (RWD) with the RWQCB. The RWQCB staff analyzes the discharge and prepares a draft "waste discharge requirements" (WDR), which constitute a permit for the discharge. Publicly owned treatment works must acquire WDRs prior to discharging treated effluent to land. The WDR will contain operational requirements, effluent limitations, and monitoring requirements for discharges and receiving waters.

#### ***State Water Resources Control Board and Regional Water Quality Control Board***

The SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCBs conduct planning, permitting, and enforcement activities. The project area lies within the jurisdiction of the North Coast (NC) RWQCB. The NCRWQCB's jurisdiction covers California's north coast area including Del Norte, Humboldt, Trinity, and Mendocino Counties, and portions of Siskiyou, Modoc, and Lake Counties.

The NCRWQCB is responsible for the protection of beneficial uses of water resources within the North Coast Region. The NCRWQCB uses planning, permitting, and enforcement authorities to meet this responsibility. The *Water Quality Control Plan for the North Coast Region* (Basin Plan) is the NCRWQCB's master policy document containing descriptions of the legal, technical, and programmatic basis of water quality regulation in the region. The NCRWQCB prepared the Basin Plan in 1975 in compliance with the federal CWA and the State Porter-Cologne Water Quality Control Act, and has amended it several times, most recently in 2005. The Basin Plan establishes beneficial uses for major surface waters and their tributaries, water quality objectives intended to protect the beneficial uses, and implementation programs to meet stated objectives.

#### *NCRWQCB's Water Quality Objectives*

The Basin Plan states that water quality objectives are necessary to protect and maintain present and beneficial future uses of surface water bodies within the region. Complying with 40 CFR 131.6, the NCRWQCB has established water quality objectives for all inland surface waters and groundwater resources as a component of its anti-degradation policy. These water quality objectives are briefly summarized below:

Surface Water. The surface water quality objectives for the North Coast region state that taste, odor, and color shall not be degraded as it could adversely affect beneficial uses. Furthermore, floating materials, suspended material, settleable material, oil and greases, biostimulatory substances, sediment, bacteria, and toxic chemicals shall not be released to surface water in concentrations that would render surface water unable to fulfill its designated beneficial uses.

Groundwater. The groundwater quality objectives for the North Coast region state that tastes and odors shall not be degraded as it could adversely affect beneficial uses. Furthermore, bacteria, radioactive substances, and toxic chemicals shall not degrade groundwater resources as it could adversely affect beneficial uses.

#### *Construction Storm Water General NPDES Permit*

Created as an amendment to the CWA in 1972, the NPDES was established as a permit program to control water pollution by regulating the discharge of pollutants into waters of the United States. The NPDES permit program initially focused on regulating point source pollution. In the early 1970s an amendment to the CWA directed the NPDES program to address non-point source pollution through a phased approach.

The NPDES is federally mandated but enforced locally. Applicants with construction projects disturbing 1 or more acres of soil are required to file for coverage under the SWRCB, Order No. 99-08-DWQ, NPDES General Permit No. CAS000002 for Discharges of Storm Water Runoff Associated with

Construction Activity (General Permit). Construction activities include clearing, grading, excavation, stockpiling, and reconstruction of existing facilities involving removal and replacement.

The General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP should contain a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, storm water collection and discharge points, general topography both before and after construction, and drainage patterns across the project. The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. BMPs consist of the following strategies:

- “Site Planning Considerations” such as preservation of existing vegetation.
- “Vegetation Stabilization” through methods such as seeding and planting.
- “Physical Stabilization” through use of dust control and stabilization measures.
- “Diversion of Runoff” by utilizing earth dikes and temporary drains and swales.
- “Velocity Reduction” through measures such as slope roughening/terracing.
- “Sediment Trapping/Filtering” through use of silt fences, straw bale and sand bag filters, and sediment traps and basins.

## ***REGIONAL/LOCAL***

### ***County of Sonoma***

The Sonoma County General Plan (General Plan) outlines hydrology and water quality policies within the Resource Conservation and Public Safety elements that regulate development within the General Plan planning area, which includes the project site. Policies that may relate to the Proposed Project include:

#### ***Resource Conservation***

- Policy RC-3a** Grading, filling, and construction should not substantially reduce or divert any stream flow that would affect groundwater recharge.
- Policy RC-3d** Continue to encourage the construction of wastewater disposal systems designed to reclaim and reuse treated wastewater on agricultural crops, and for other irrigation and wildlife enhancement projects.
- Policy RC-3e** Encourage wastewater disposal methods which minimize reliance on discharges into natural waterways.

#### ***Public Safety Policies***

- Policy PS-2c** Base land use planning and development review on FEMA maps and data or parcel specific scaled interpretations of these maps and site specific elevation data.

- Policy PS-2d** Prepare a comprehensive analysis of the potential flood hazards and drainage impacts associated with adopted land use plans for each major watershed in the County. Pending completion of the drainage analyses, individual project applications shall be required to analyze and mitigate drainage impacts, based upon the land use plan, as determined by the Water Agency.
- Policy PS-2f** On-site and off-site flood related hazards shall be reviewed for all projects located within areas subject to known flood hazards.
- Policy PS-2g** Regulate development, water diversion, vegetation removal, grading and fills to minimize any increase in flooding and related damage to people and property.
- Policy PS-2i** Consider the potential risk of damage from flooding in the design and review of projects, including those, which could facilitate floodplain development.
- Policy PS-2n** Continue to enforce county code requirements on construction in flood hazard areas and other adopted regulations, which implement the National Flood Insurance Program.
- Policy PS-2p** Limit filling in areas, which could retain a significant amount of floodwater.

Sonoma County is currently in the process of updating its General Plan. The following policy changes that relate to water resources are proposed within the General Plan 2020:

*Water Resource Policies (New General Plan Element)*

- Policy WR-1b** Design, construct, and maintain County buildings, roads, bridges, drainage and other facilities to minimize sediment and other pollutants in storm water flows. Develop and implement “best management practices” for ongoing maintenance and operation.
- Policy WR-1d** Support RWQCB waste discharge requirements for all wastewater treatment systems and other point sources.
- Policy WR-1g** Minimize deposition and discharge of sediment, debris, waste and other pollutants into surface runoff, drainage systems, surface water bodies, and groundwater.
- Policy WR-1h** Continue to require grading plans to include measures to avoid soil erosion and consider upgrading requirements as needed to avoid sedimentation in storm water to the maximum extent practicable.
- Policy WR-2t** Require that discretionary projects, to the maximum extent practicable, maintain or increase the site’s pre-development absorption of runoff to recharge groundwater. Implementation would include standards which could regulate impervious surfaces, vary by project type, land use, soils and area characteristics, and provide for water impoundments, protecting and planting vegetation, cisterns and other measures to increase runoff retention and groundwater recharge.

### 3.3.4 IMPACTS AND MITIGATION MEASURES

#### *SIGNIFICANCE CRITERIA*

##### *Storm Drainage and Flooding*

A drainage or flooding impact of the Proposed Project would be considered significant if it directly or indirectly results in any of the following:

- Changes in quantity, quality, or rate and direction of flow of groundwater or surface water, either by direct additions or withdrawals or by puncture of an aquitard<sup>1</sup>, sufficient to preclude an intended use;
- Substantially alters the existing drainage pattern of the site or area or substantially increases the rate or amount of surface runoff in a manner that would result in flooding on- or off-site;
- Places structures within a 100-year flood hazard area as mapped on a federal flood hazard boundary map, flood insurance rate map, or other flood hazard delineation map;
- Exposes people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam;
- Introduces development that would interfere with the ability of an agency to repair or maintain levees for public safety; or
- Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

##### *Water Quality*

A water quality impact of the Proposed Project would be considered significant if it directly or indirectly results in any of the following:

- Violates any water quality standards, waste discharge requirements, or otherwise substantially degrades water quality;
- Substantially alters the existing drainage pattern of the site or area in a manner that would result in substantial erosion or siltation on- or off-site; or
- Substantially degrades the existing surface and groundwater quality due to erosion and siltation.

#### *ANALYSIS METHODOLOGY*

This section identifies impacts to water resources that could occur from construction, operation, and/or maintenance of the Proposed Project. Impacts to water resources were analyzed based on an examination of the project site, published information regarding the water resources of the project area, and field studies. Where impacts to water resources would exceed the significance thresholds listed above,

---

<sup>1</sup> An aquitard is a geologic formation that restricts water flow from one aquifer to another.

mitigation measures have been recommended to reduce impacts to less-than-significant levels. Impacts associated with significance criteria that were determined to be less than significant in the Initial Study (**Appendix A**) do not warrant further analysis in accordance with CEQA guidelines, and are not discussed within this EIR.

## ***IMPACTS AND MITIGATION MEASURES***

### ***Construction Impacts***

#### **Impact**

#### **3.3-1 Construction and excavation activities associated with the Proposed Project have the potential to result in soil erosion, which could adversely impact nearby waterways as a result of siltation and water quality degradation. Less than Significant with Mitigation.**

Construction of the Proposed Project would involve activities such as excavation and stockpiling of imported fill on the project site. These activities could result in erosion and sediment discharge into the drainage system and subsequently into the Russian River. Water quality decreases through increased turbidity and increased amounts of total suspended solids, which influences stream ecology and the amount of treatment needed for human consumption. Siltation can damage downstream agriculture by inhibiting or delaying seed emergence and burying small seedlings. It can also contribute to road damage, clog drainage ditches and stream channels, cover fish spawning grounds, and may increase silt in reservoirs.

In addition, construction equipment and materials have the potential to leak, thereby discharging additional pollutants into the stormwater. Construction site pollutants include particulate matter, sediment, oils and greases and construction supplies such as concrete, paints, and adhesives. Discharge of these pollutants could result in contamination of area drainages, causing an exceedance of water quality objectives. Because construction and excavation activities associated with the Proposed Project have the potential to result in soil erosion, siltation, and discharge of pollutants to surface waters, which could lead to adverse environmental consequences, this is considered a *potentially significant* impact.

#### **Mitigation Measure**

**3.3-1** Off-site impacts due to erosion will be prevented by implementation of a SWPPP. A SWPPP is required by the United States Environmental Protection Agency (USEPA) under the Clean Water Act and would be prepared to address water quality impacts associated with construction and operation of the project. The SWPPP will identify BMPs and the location of erosion control features recommended to direct and filter stormwater runoff during construction. The SWPPP will also specify stormwater pollution prevention measures, including construction details, compliance standards, procedural requirements, regulatory compliance requirements, and implementation timeframe requirements. Water quality control measures shall be identified in

the SWPPP that address erosion. These measures shall include, but are not limited to, the following:

Construction activities:

1. Grading activities shall be limited to the immediate area required for construction. Natural cover, topography, and drainage shall be preserved to the maximum extent possible to protect disturbed soils from rainfall related run-off during construction.
2. Existing vegetation shall be retained where possible. Trees and shrubs shall not be removed unnecessarily. After grading activities, disturbed areas shall be stabilized as promptly as possible, especially on long or steep slopes. Recommended plant materials and mulches shall be used to establish protective ground cover. Vegetation such as fast-growing annual and perennial grasses shall be used to shield and bind the soil. Mulches and artificial binders shall be used until vegetation is established.
3. Construction activities shall be scheduled to minimize land disturbance during peak runoff periods in winter and spring. Disturbed surfaces shall be protected with erosion control measures during the winter and spring months.
4. Utility installations shall be coordinated to limit the number of excavations.
5. Surface water runoff shall be controlled by directing flowing water away from critical areas and by reducing runoff velocity. Diversion structures such as terraces, dikes, and ditches shall collect and direct runoff water around vulnerable areas to prepared drainage outlets.
6. Temporary erosion control measures shall be employed to prevent erosion and to retain sediment from disturbed areas on-site. Surface roughening, berms, vegetated swales check dams, staked straw bales, temporary revegetation, or similar devices shall be used to reduce runoff velocity and erosion. Measures such as silt fences, fiber rolls, sediment basins, traps, rock bag dams, inlet protectors, vegetative filters and buffers, or other appropriate measures shall be used to retain sediment onsite.
7. Where truck traffic is frequent, approaches shall be stabilized with crushed aggregate to reduce soil compaction and limit the tracking of sediment onto local roads.
8. Construction materials, including topsoil and chemicals, shall be stored, covered, and isolated to prevent runoff losses and contamination of groundwater. Berms shall be placed around topsoil stockpiles to prevent runoff during storm events. Disposal facilities shall be provided for soil wastes, including excess asphalt produced during construction.
9. All necessary permits and approvals shall be obtained, including a NPDES General Permit for Storm Water Discharges from Construction Activities.
10. A spill prevention and countermeasure plan shall be developed, if necessary, which will identify proper storage, collection, and disposal measures for potential pollutants (such as



fuel, fertilizers, pesticides, etc.) used onsite. The plan will require the proper storage, handling, use, and disposal of petroleum products.

11. Establish fuel and vehicle maintenance areas away from all drainage courses and design these areas to control runoff.
12. Provide sanitary facilities for construction workers.

### **Significance After Mitigation**

Implementation of BMPs during construction activities would minimize erosion within and around the project site and ensure that contamination of nearby waterways does not occur. Therefore, after mitigation, this impact would be *less than significant*.

### **Impact**

#### **3.3-2 Construction of the Proposed Project may impact groundwater quality if excavation activities intercept the groundwater table. Less than Significant.**

As previously discussed, construction of the equalization basin would require excavation of the north-south slope at the construction site within the District's facility. The elevation of the bottom of the equalization basin, and ultimately the size of the equalization basin, depends on the groundwater elevation at the site. A geotechnical report of the construction site approximated groundwater elevation at 45 feet. Other monitoring events at the project site (1996-2004) reported groundwater levels from 41 to 52.6 feet (HDR, 2005). The preliminary design of the equalization basin places the bottom of the basin at an elevation of 55 feet. As such, it is not anticipated that the basin would intercept the groundwater table. Therefore, this impact is *less than significant*.

### **Mitigation Measure**

None required.

### **Operational Impacts**

### **Impact**

#### **3.3-3 Operation of the equalization basin could result in impacts to water quality from disposal or overflow of contaminated storm water captured in the equalization basin. Less than Significant.**

The equalization basin would hold wastewater when flows exceed the WWTP treatment or disposal capacities. Depending on need, the equalization basin may store either untreated or treated wastewater. Furthermore, wastewater, treated or untreated, stored in the equalization

basin would co-mingle with storm water during rain events. Using the same basin for storage of untreated and treated wastewater, plus co-mingling with rainwater, would constitute a water quality impact if discharged to the surrounding environment. However, the WWTP and the equalization basin would be a closed system where the only disposal would occur through the irrigation outlets to the spray fields and river discharge line from the WWTP, and not from the equalization basin. Any wastewater stored in the equalization basin would be re-routed through the full treatment process to ensure discharge from the WWTP of disinfected tertiary treated water in accordance with Title 22. Impacts to water quality could also occur if untreated wastewater were to overflow during a storm event and enter surface waters through runoff. This would be avoided by allowing adequate freeboard in the equalization basin to contain a 100-year storm event. This impact is considered *less than significant*.

### Mitigation Measures

None required.

### Impact

- 3.3-4 During operation of the Proposed Project, seasonal variations in groundwater levels could result in groundwater elevations above the base level of the equalization basin bottom. The pressure of groundwater on the basin liner could compromise the structural integrity of the reservoir, resulting in co-mingling of treated, partially treated, or untreated wastewater with groundwater. Less than Significant.**

The storage of untreated, partially treated, or treated wastewater in the equalization basin could contaminate groundwater resources if high groundwater seeps into the basin, or if wastewater seeps into the groundwater table through the soil of the earthen equalization basin. As described in the project description, the earthen basin would be lined with an impermeable liner material, such as polypropylene. Under normal conditions, the liner would prevent co-mingling between groundwater and wastewater, and no impacts to groundwater would occur. In the anomalous situation that groundwater levels rise above the depth of the liner, structural damage could occur to the liner. Groundwater pressure could build until the liner fails and co-mingling of wastewater and groundwater occurs. The potential for groundwater fluctuations and the resulting effect on the reservoir liner would be considered in the final engineering design of the equalization basin. Specific designs and controls would be implemented that would eliminate the potential for damage to the basin liner. Potential design features that could be employed to reduce adverse effects of high groundwater include drainage blankets beneath the basin liner, perimeter pumps to temporarily decrease hydrostatic pressure, perimeter drainage trenches, and a specific schedule for monitoring of groundwater levels. These design features are standard engineering practices and will be incorporated into the final design. Therefore, this impact is considered *less than significant*.

**Mitigation Measure**

None required.

**Impact****3.3-5 Implementation of the Proposed Project would expose people or structures to risks related to flooding as a result of failure of the basin levees. Less than Significant.**

As described in **Section 3.2**, possible ground shaking from substantial seismic events could occur at the WWTP, causing structural damage to the proposed equalization basin and off-site flooding. However, the structure of the basin has been designed to withstand the effects of expected seismic events, and secondary ground failures associated with ground shaking. As discussed under Impact 3.2-1, an intermediate foundation system would be installed that would improve structural performance during seismic events over conventional foundation methods. During operation, the equalization basin would be visually inspected on a regular basis to ensure that the embankments, control structures, and access road are maintained. Through project design elements that would improve structural performance during seismic events, and the preparation of an emergency plan as described in **Section 2.7**, impacts associated with flooding as a result of embankment failure would be considered *less than significant*.

**Mitigation Measures**

None required.

**Impact****3.3-6 The Proposed Project could alter existing drainage patterns on site and increase impervious surfaces resulting in excessive run-off during a storm event. Less than Significant.**

Development of the equalization basin would convert unimproved land on the WWTP property to open water. The basin has been designed to allow for the storage of wastewater with adequate freeboard to contain a 100-year storm event. Thus, precipitation falling directly on the equalization basin would be contained within the structure. The earthen embankments of the equalization basin would be covered with soil and revegetated, limiting impervious areas. Stormwater runoff from upstream areas would be rerouted around the basin and conveyed to downstream drainage channels. As a result, overall storm water flows downstream would likely be reduced as a result of development of the equalization basin. Therefore, no impact is expected and no mitigation is required.

**Mitigation Measure**

None required.

## 3.4 CULTURAL RESOURCES

### 3.4.1 INTRODUCTION

This section addresses the potential for the Proposed Project to impact cultural resources. Following an overview of the cultural resources setting in **Subsection 3.4.2** and the relevant regulatory setting in **Subsection 3.4.3**, project-related impacts and recommended mitigation measures are presented in **Subsection 3.4.4**.

This section summarizes information contained in a stand-alone report *Cultural Resources Survey: Russian River WWTP Project*. A copy of the report, which is bound under a separate copy to ensure protection of cultural resources, is available to authorized parties under a separate cover. Please contact the Lead Agency.

### 3.4.2 CULTURAL RESOURCES SETTING

#### *ARCHAEOLOGICAL OVERVIEW*

An analytic framework for the interpretation of Sonoma County prehistory is provided by Frederickson (1974), who divided human history in California into three broad periods: the Paleoindian period, the Archaic period, and the Emergent period. This scheme used sociopolitical complexity, trade networks, population, and the introduction and variations of artifact types to differentiate between cultural units. The scheme remains the dominant framework for this region's prehistoric archaeological research.

The Paleoindian period (10,000-6000 B.C.) was characterized by small, highly mobile groups occupying broad geographic areas. During the Archaic period, consisting of the Lower Archaic period (6000-3000 B.C.), Middle Archaic period (3000-1000 B.C.) and Upper Archaic period (1000 B.C.–A.D. 500), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be exploited. The addition of milling tools, obsidian and chert concave-base projectile points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the Upper Archaic, mobility was being replaced by a more sedentary adaptation in the development of numerous small villages, and the beginnings of a more complex society and economy began to emerge. During the Emergent period (A.D. 500-1800), social complexity developed toward the ethnographic pattern of large, central villages where political leaders resided, with associated hamlets and specialized activity sites. Artifacts associated with this period are the bow and arrow, small serrated corner-notched points, mortars and pestles, and a diversity of beads and ornaments, which become especially abundant (Gerike et al., 1996:3.11-3.17).

Several archaeological surveys have been conducted on lands in the vicinity of the project area and at least two recorded prehistoric archaeological sites are located within 1 mile of the area of potential effects (APE). These sites consist of darkened midden soils containing deposits of ash, heat-affected rock,

marine shell, flaked and groundstone artifacts, and/or obsidian, basalt, and chert tool-manufacturing debris. Prehistoric Native American sites in this area are generally found on midslope terraces, alluvial terraces, near changes in ecotones, and near sources of water, including springs, marshes, vernal pools, and perennial and intermittent watercourses.

### ***ETHNOGRAPHIC OVERVIEW***

Ethnographic literature indicates that at the time of historic contact, the project area was part of lands of the Southern Pomo-speaking tribelet or village community of *Mo'qos'pewlo*, which occupied the areas near the present town of Guerneville (Barrett, 1908; Bean and Theodoratus, 1978; Kroeber, 1925). The environs of the Russian River drainage, the town of Guerneville and the foothills to the east of the study area were intensively used by the Southern Pomo. Several ethnographic villages and campsites are located in the general vicinity of the study area. The closest reported ethnographic village to the study area is "ciyole," located at the present town of Guerneville (Barrett 1908:214). The ancestors of the Southern Pomo may have moved from Clear Lake into the area of the lower Russian River, the Laguna de Santa Rosa, and the coastal drainages around 1,500 years ago (Gerike et al., 1996:3.11-3.17). The Pomo peoples organized themselves into small groups that anthropologists call tribelets or village communities; the social and political organization of these individual groups showed considerable variation (McLendon and Oswalt, 1978:276). The Pomo economy was based on a seasonal round of fishing, hunting, and the collection of a variety of plants for food, tools and structures (Barrett 1908:211).

### ***HISTORICAL OVERVIEW***

Many of the traditional lifeways and land-use patterns that served the Pomoan peoples for centuries changed abruptly with the establishment of the Spanish missions in the Bay Area. Native Americans were brought into the missions, both willingly and by force, to be converted to Christianity, to learn farming and other "civilized" skills, and to serve as laborers. Many of the Native Americans at the missions died of diseases introduced by foreign settlers and from malnutrition. By the mid-1800s, settlement within the Sonoma County region had not only displaced the Native people from their villages and the land-based resources, but had also disrupted culturally and economically significant seasonal gathering strategies and trade (McLendon and Oswalt, 1978:279, 414).

Sonoma County was one of the original 27 counties in California. The county seat was originally located in the town of Sonoma in 1850, but was later moved to Santa Rosa in 1854 (Hoover et al., 1990:474). The nearby town of Guerneville, earlier named Stumptown, was originally settled in 1860 by R. B. Lunsford. When the post office was established in the 1870s, the town was renamed for George E. Guerne, a native of Ohio, who built a sawmill there in 1864 (Gudde, 1998:155). The area soon developed into a lumber center that supplied timber to San Francisco. In 1870 a narrow gauge railroad connected western Sonoma County to the San Francisco Bay Area. As the timber industry declined, the lower Russian River area began to see the development of resorts along the river. Sightseers would travel by railroad from Sausalito to Guerneville to view the redwoods and Russian River. Bohemian Grove, a

retreat area established in 1880 by the Bohemian Club of San Francisco, is but one example of the resort boom that the area witnessed through the beginning of World War II. The resort period lasted through the outbreak of World War II. Following the war, resorts gradually gave way to summer and retirement homes. Eventually, year-round residency facilitated infrastructure improvements.

### 3.4.3 REGULATORY SETTING

#### *NATIONAL HISTORIC PRESERVATION ACT*

The National Historic Preservation Act of 1966 (as amended through 2000) authorizes the National Register of Historic Places (NRHP), a program for the preservation of historic properties (“cultural resources”) throughout the Nation. The significance criteria for evaluating cultural resources for listing in the NRHP are defined in 36 CFR 60.4 as follows.

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and

- A. that are associated with events that have made a significant contribution to the broad patterns of our history;
- B. that are associated with the lives of persons significant in our past;
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. that have yielded, or may be likely to yield, information important to prehistory or history.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP.

All properties change over time, therefore, it is not necessary for a property to retain all its historic physical features or characteristics in order to be eligible for listing on the NRHP. The property must, however, retain enough integrity to enable it to convey its historic identity; in other words, to be recognizable to a historical contemporary.

While most historic buildings and many historic archaeological properties are significant because of their association with important events, people, or styles (criteria A, B, and C), the significance of most prehistoric and historic-period archaeological properties is usually assessed under criterion D. This criterion stresses the importance of the information contained within an archaeological site, rather than its intrinsic value as a surviving example of a type or its historical association with an important person or

event. As discussed further in **Section 4.4.4**, no historic properties eligible for listing in the NRHP are known to exist in the project area.

#### ***CALIFORNIA REGISTER OF HISTORICAL RESOURCES***

PRC Section 5024.1 authorizes the establishment of the California Register of Historical Resources (CRHR). Any identified cultural resources must therefore be evaluated against the CRHR criteria. In order to be determined eligible for listing in the CRHR, a property must be significant at the local, state, or national level under one or more of the four significance criteria, modeled on the NRHP. In order to be determined eligible for listing in the CRHR, a property must be significant at the local, state, or national level under one or more of the following four criteria:

1. It is associated with events or patterns of events that have made a significant contribution to the broad patterns of the history and cultural heritage of California and the United States.
2. It is associated with the lives of persons important to the nation or to California's past.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. It has yielded, or may be likely to yield, information important to the prehistory or history of the state and the nation.

In addition to meeting one or more of the above criteria, a significant property must also retain integrity. Properties eligible for listing in the CRHR must retain enough of their historic character to convey the reason(s) for their significance. Integrity is judged in relation to location, design, setting, materials, workmanship, feeling, and association. As discussed further in **Section 3.4.4**, no historic properties eligible for listing in the CRHR are known to exist in the project area.

#### ***CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)***

CEQA *Guidelines* 15064.5 and Public Resources Code (PRC) Section 21083.2 include provisions for significance criteria related to archaeological and historical resources. A significant archaeological or historical resource is defined as one that meets the criteria of the CRHR, is included in a local register of historical resources, or is determined by the lead agency to be historically significant. A significant impact is characterized as a "substantial adverse change in the significance of a historical resource."

PRC Section 21083.2 addresses the treatment of unique archaeological resources, defined as "an archaeological artifact, object, or site about which it can be clearly demonstrated" as meeting any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

- Has a special and particular quality such as being the oldest of its type or the best example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, appropriate mitigation measures shall be required to preserve the resource in place and in an undisturbed state.

Mitigation measures may include, but are not limited to 1) planning construction to avoid the site, 2) deeding conservation easements, or 3) capping the site prior to construction. If a resource is determined to be a “non-unique archaeological resource,” no further consideration of the resource by the lead agency is necessary.

### 3.4.4 IMPACTS AND MITIGATION MEASURES

#### *SIGNIFICANCE CRITERIA*

For the purpose of this analysis, the following applicable thresholds of significance have been used to determine whether implementing the Proposed Project would result in a significant impact. These thresholds of significance are based on the CEQA Guidelines. An impact to cultural resources is considered significant if implementation of the Proposed Project would result in any of the following:

- Cause a substantial adverse change in the significance of a historic resource as defined in PRC 21083.2 and CEQA *Guidelines* 15064.5
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to CEQA *Guidelines* 15064.5;
- Disturbance or destruction of a unique paleontological resource or site or unique geologic feature; or
- Disturb any human remains, including those interred outside of formal cemeteries.

CEQA *Guidelines* 15064.5 defines “substantial adverse change” as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings.

PRC Section 21083.2 defines “unique archaeological resource” as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets one or more of the following criteria: (1) that it contains information needed to answer important scientific research questions and that there is demonstrable public interest in that information; (2) that it has a special and particular quality, such as being the oldest of its type or the best available example of its type; or (3) that it is directly associated with a scientifically recognized important prehistoric or historic event or person.



Section 15064.5 of the State CEQA Guidelines defines “historic resource as a resource (1) listed on, or determined to be eligible by the State Historic Resources Commission for listing on, the CRHR; (2) listed in a local register of historic resources or as a significant resource in a historical resource survey; or (3) considered to be “historically significant” by a lead agency as supported by substantial evidence in the record.

### ***ANALYSIS METHODOLOGIES***

#### ***Records and Literature Search***

Prior to the field study a records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System by NWIC staff, which is housed at Sacramento State University. The NWIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of archaeological and historic records and reports for a 16-county area that includes Sonoma County. Additional research was conducted using the files and literature on file at AES.

The records search and literature review for this study was done to (1) determine whether known cultural resources had been recorded within or adjacent to the study area; (2) assess the likelihood of unrecorded cultural resources based on archaeological, ethnographic, and historical documents and literature; and (3) to review the distribution of nearby archaeological sites in relation to their environmental setting.

Included in the review were the *California Inventory of Historical Resources* (California Office of Historic Preservation, 1976), the California Office of Historic Preservation’s *Five Views: An Ethnic Historic Site Survey for California* (1988), *California Historical Landmarks* (1990), *California Points of Historical Interest* (1992), and the *Historic Properties Directory Listing* (2005). The *Historic Properties Directory* includes the National Register of Historic Places, the California Register of Historical Resources, and the most recent listings (through March 8, 2006) of the California Historical Landmarks and California Points of Historical Interest.

The records search found that no prehistoric or historic-period cultural resources have been recorded within the APE. Two previous cultural resources studies (Stoddard, 1976; Origer, 1998) have been conducted within the project area. Each of these studies failed to identify any cultural resources. The review also found that no cultural resources have been recorded within 0.5 miles of the project area and that six studies have been conducted within 0.25 miles of the project site (Loyd and Origer, 1994; Beard, 1995; Origer, 1999; Checkal, 2000a; Checkal, 2000b; Checkal, 2004; Edwards, 2002).

Given the high composition of fill and the extent of disturbance within the APE, as well as the two previous surveys resulting in negative findings, it was anticipated that prehistoric or historic-period resources would likely not be encountered during the survey.

### ***Consultation***

On February 1, 2006, the State of California Native American Heritage Commission (NAHC) was asked to review the Sacred Lands file for information on Native American cultural resources on the project site. On February 6, 2006, the NAHC responded indicating that they have no knowledge of Native American resources within the project site. However, they did provide a list of 14 individuals/organizations to further consult with and consultation letters were sent to these individuals/organizations on February 14, 2006.

### ***Field Survey***

Damon Haydu, AES Staff Archaeologist, conducted a cultural resources field study of the project area on January 26, 2006. The study included an on-foot survey in 5- to 10-meter-wide linear transects within the APE proposed for the proposed Equalization Basin Storage Pond Project. In addition, cut banks along eroded slopes and a dirt access road were examined for soil profiles. Surface visibility was considered good due to most areas (approximately 80%) being bare soil. However, much of the project site had been significantly disturbed due to extensive grading. The ground surface was examined for archaeological remains, while rodent burrow backdirt piles and road cuts were examined for indicators of buried archaeological deposits.

### ***Findings***

No prehistoric or historic cultural resources were identified within the APE as a result of the current study. No further archaeological study is warranted at this time unless the project design changes to exceed its existing boundaries.

## ***IMPACTS AND MITIGATION MEASURES***

### **Impact**

#### **3.4-1 Ground disturbing construction activities may result in impacts to previously unidentified subsurface cultural resources. Less than Significant with Mitigation.**

There is always the likelihood that previously unknown archaeological resources will be encountered during subsurface construction activities. This would be a *potentially significant* impact. Mitigation for potential impacts to unknown cultural resources is specified below.

### **Mitigation Measure**

- 3.4-1** In the event of any inadvertent discovery of archaeological resources, all such finds shall be subject to PRC 21083.2 and CEQA *Guidelines* 15064.5. Procedures for inadvertent discovery include:
- All work within 50 feet of the find shall be halted until a professional archaeologist, or paleontologist can evaluate the significance of the find in accordance with the criteria of the CRHR.

- If any find is determined to be significant by the archaeologist, or paleontologist as appropriate, then representatives of the District shall meet with the archaeologist, or paleontologist, to determine the appropriate course of action.
- All significant cultural or paleontological materials recovered shall be subject to scientific analysis, professional curation, and a report prepared by the professional archaeologist, or paleontologist, according to current professional standards.

Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human grave. If human remains are encountered, work shall halt in the vicinity and the Sonoma County Coroner shall be notified immediately. At the same time, an archaeologist shall be contacted to evaluate the situation. If human remains are of Native American origin, the Coroner must notify the NAHC within 24 hours of this identification.

#### **Significance After Mitigation**

Implementation of these standard procedures for unanticipated discovery would reduce the potential for impacts to previously unidentified subsurface cultural resources. Therefore, after mitigation this impact would be considered *less than significant*.

## 3.5 BIOLOGICAL RESOURCES

### 3.5.1 INTRODUCTION

This section addresses the potential for the Proposed Project to impact biological resources. Following an overview of the biological resources setting in **Subsection 3.5.2** and the relevant regulatory setting in **Subsection 3.5.3**, project-related impacts and recommended mitigation measures are presented in **Subsection 3.5.4**.

### 3.5.2 BIOLOGICAL SETTING

The project site is located on the Camp Meeker USGS 7.5-minute topographic quadrangle within Township 7 North, Range 10 West, Section 5. The project site is in a rural residential setting, near the incorporated area of Guerneville. It is located at approximately 100 feet in elevation, sloping downward from north to south, approximately one-eighth of a mile from the Russian River (USGS 1995). The project site is located at the interface between a redwood grove on the lower, flatter, southern portion of the site, and grassland and mixed woodland on the higher-gradient, northern portion of the site.

The project site is located within the existing boundaries of the WWTP property. The study area is an approximately 2.5-acre area on the western side of the WWTP property (**Figure 3.5-1**). The study area includes the footprint of proposed equalization basin and associated utilities, as well as an approximately 10- to 50-foot buffer around the impact area.

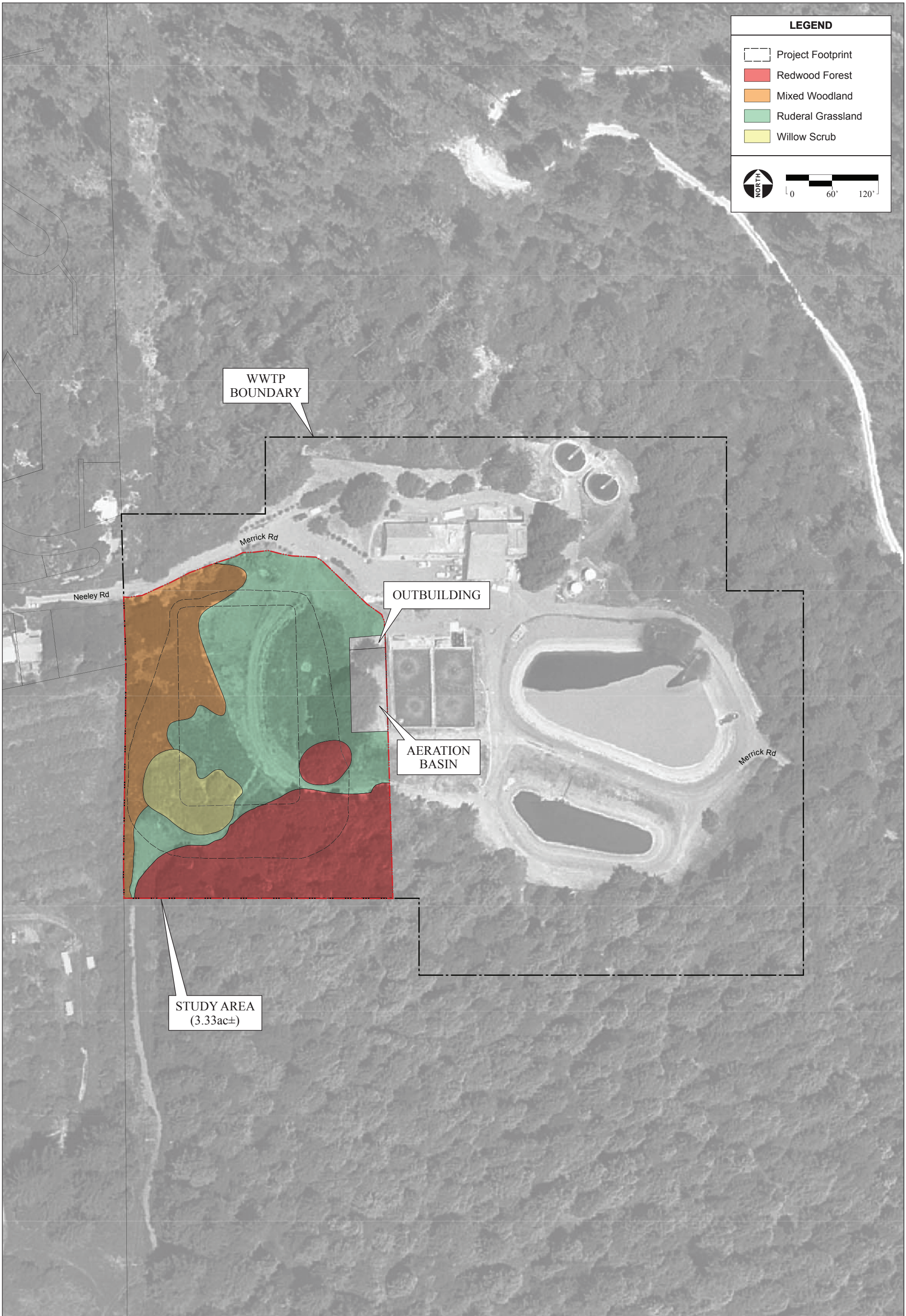
#### **METHODOLOGY**

Field assessments of the project site were conducted on May 30 and 31, 2006 and September 12, 2006. The purpose of the field assessments was to determine the types of habitats present, evaluate the suitability of the site to support special-status species, determine whether special-status species occur on site, and to delineate the project site's wetlands. During each field assessment, biologists walked meandering transects sufficient to achieve full visual coverage of all habitats that had potential to contain special-status plant species that were identifiable at that time of year.

#### **HABITAT TYPES**

The site contains four habitat types: ruderal grassland, mixed evergreen forest, redwood forest, and willow scrub (**Figure 3.5-1**). Wetlands occur in the southern portion of the study area, primarily in the redwood forest and willow scrub habitats. Wetlands are discussed below in the wetland habitats and Waters of the US Section.







### ***Ruderal/ Developed***

The ruderal/developed community occupies the central portion of the project site and is the predominant habitat type. The ruderal/developed habitat is mowed and/or sprayed with fine control weed suppressors on a regular basis for maintenance purposes. Vegetation occurring in this community primarily comprises annual grasses and forbs typical of disturbed places. A portion of the area receives sprayed, treated wastewater. Within the area that receives treated wastewater, the dominant vegetation is nutsedge (*Cyperus* sp.), common velvet grass (*Holcus lanatus*), Italian ryegrass (*Lolium multiflorum*), annual beard grass (*Polypogon monspeliensis*), and Himalayan blackberry (*Rubus discolor*). The dominant plants in the areas that do not receive treated wastewater are California brome (*Bromus carinatus*), soft chess (*Bromus hordeaceus*), bluegrass (*Poa* sp.), nit grass (*Gastridium ventricosum*), annual beard grass, wheat (*Triticum aestivum*), squirrel tail (*Elymus elymoides*), English plantain (*Plantago lanceolata*), and rough cat's-ear (*Hypochaeris radicata*). The ruderal grassland corresponds to disturbed Annual Grassland in the CWHR system (CDFG, 2002); disturbed Valley and Foothill Grassland in the Holland system (Holland, 1986); and disturbed California Annual Grassland Series in the Sawyer and Keeler-Wolf (1995) system. Photographs of the ruderal grassland habitat in the study area are shown in **Figure 3.5-2**.

### ***Redwood Forest***

Redwood forest is the dominant habitat in the flat, alluvial area at the southern end of the project site. The tree layer is dominated by second-growth redwoods (*Sequoia sempervirens*). No old-growth redwood trees occur on the project site. Subdominant trees included Oregon ash (*Fraxinus latifolia*). Near the perimeter of the redwood forest are occasional Douglas-fir (*Pseudotsuga menziesii*), California laurel (*Umbellularia californica*), big-leaf maple (*Acer macrophyllum*), and coast live oak (*Quercus agrifolia*). Few shrubs occur within the redwood forest. Near its perimeter, California hazelnuts (*Corylus cornuta*) and Himalayan blackberry are common. Poison oak (*Toxicodendron diversilobum*) vines are common in this community. Herbaceous vegetation is sparse, except in wetland areas. Outside of wetlands, near the forest perimeter, forget-me-not (*Myosotis latifolia*) and buttercup (*Ranunculus* sp.) occur occasionally. Within wetland areas, nutsedge and knotweed (*Polygonum* sp.) are dominant. The redwood forest habitat corresponds to Redwood habitat in the California Wildlife Habitat Relationships System (CWHR) (CDFG, 2002); Alluvial Redwood Forest in the Holland system of classification (Holland, 1986); and the Redwood Series in the Sawyer and Keeler-Wolf (1995) vegetation classification system. A photograph of the redwood forest habitat is shown in **Figure 3.5-2**.

### ***Mixed Evergreen Forest***

Mixed woodland occurs in the dry, higher gradient, northwestern portion of the project site. The mixed woodland contains a mix of conifers and broadleaf trees. Dominant trees are coast live oak and redwood. Also occurring are Douglas-fir, tanbark oak (*Lithocarpus densiflorus*), and California laurel. The shrub layer is dominated by hoary coffeeberry (*Rhamnus tomentella*), French broom (*Genista monspessulana*), and poison oak, with Himalayan blackberry occurring commonly. The mixed woodland corresponds to Coastal Oak Woodland in the CWHR system (CDFG, 2002); Mixed Cismontane Woodland in the



**PHOTO 1:** View of redwood forest habitat.



**PHOTO 2:** View of mixed evergreen forest habitat. Vegetation in this view is dominated by coast live oak trees, redwood, and French broom shrubs.



**PHOTO 3:** View of ruderal grassland habitat. Photograph taken from southern part of project site, looking north.



**PHOTO 4:** Portions of the project site receive sprayed, treated wastewater. Photograph shows a portion of ruderal grassland habitat that receives treated wastewater. Due to the application of treated wastewater, this area artificially exhibits wetland-adapted vegetation.

Holland system (Holland, 1986); and the Coast Live Oak Series in the Sawyer and Keeler-Wolf (1995) system. A photograph of the mixed woodland habitat in the study area is shown in **Figure 3.5-2**.

#### ***WETLAND HABITATS AND WATERS OF THE US***

The term “Waters of the US” is defined as:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands; or
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use or degradation of which could affect interstate or foreign commerce (38 CFR Part 328).

“Wetlands” are defined as:

- Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (38 CFR Part 328).

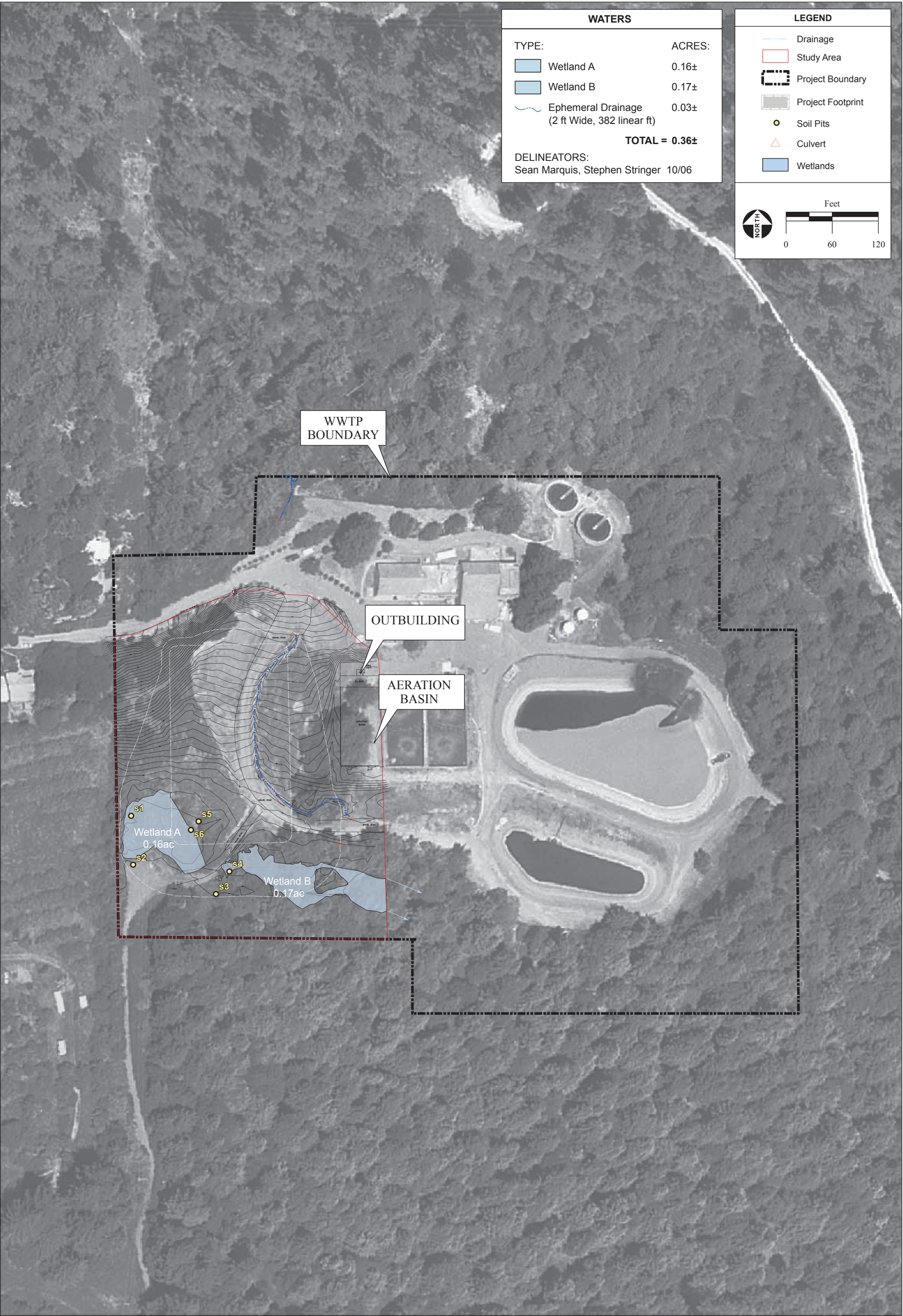
#### ***Wetlands***

Two wetlands (Wetlands A and B) occur within the study area (**Figure 3.5-3**) and are discussed below. Both wetlands appear to be supported by stormwater runoff in the wet season and by sprayed wastewater in the dry season. The wetlands may have been historically connected; however, an existing road separates them and no culverts connect the two wetlands.

**Wetland A** is a willow scrub wetland (**Figure 3.5-4**) that occurs in the southwestern portion of the study area. Wetland A has a canopy of mixed low trees and shrubs dominated by red willows (*Salix laevigata*). Oregon ash is a subdominant in this layer. The herbaceous layer is dominated by nutsedge, Italian ryegrass, and common velvet grass. The willow scrub wetland is classified as a Palustrine Scrub-Shrub Wetland, according to the Cowardin system of wetland classification (Cowardin et al., 1979).

Wetland A is in a low point in the topography that collects runoff from the hillside to its north, as well as treated wastewater from several sprinklers on the hillside and in the wetland itself. Approximately 12 inches of water was ponded in Wetland A at the time of the delineation. Wetland A is in a closed depression bordered by a berm along the western study area boundary and by a gravel road that forms the southern boundary of Wetland A. No outflow of water was observed from Wetland A.









**PHOTO 5:** View of willow scrub habitat. Photograph taken within Wetland A.



**PHOTO 6:** View of drainage within project site. Photograph taken looking north (upstream). The drainage was realigned as part of a previous project.



**PHOTO 7:** View of Wetland A. Standing water was present during a May 30, 2006 field survey. Most of Wetland A occurs within willow scrub habitat. Plants in the foreground are nutsedge (*Cyperus eragrostis*) and willow dock (*Rumex salicifolius*).



**PHOTO 8:** View of Wetland B. Wetland B occurs within redwood forest habitat. In the foreground is a sprinkler used to spray treated wastewater. Standing water was present during a May 30, 2006 field survey.

**Wetland B** is a forested wetland (**Figure 3.5-4**) that occurs in the southeast portion of the study area within the redwood forest community. Approximately half of Wetland B occurs in the study area. The other half extends eastward along the southern WWTP boundary. The overstory surrounding Wetland B is dominated by redwood trees. The lower canopy contains scattered Oregon ash trees. Oregon ash is the only commonly-occurring tree growing from within Wetland B that appears healthy. Himalayan blackberry was the only shrub species observed in Wetland B. Herbaceous species observed in Wetland B include nutsedge and *Polygonum* sp. Wetland B is classified as Palustrine Forested Wetland, according to the Cowardin system of wetland classification (Cowardin et al., 1979).

Wetland B is a relatively flat area with numerous, irregularly shaped depressions. Wetland B receives water from two ephemeral drainages and treated wastewater from several sprinklers in and adjacent to it. One of the ephemeral drainages that feeds Wetland B is in the study area and is discussed below. The other ephemeral drainage that feeds Wetland B is culverted under the WWTP and empties into Wetland B approximately 100 feet east of the study area. Water was ponded in several of the depressions in Wetland B at the time of the delineation ranging from several inches to approximately two feet in depth. No outflow of water was observed from Wetland B.

#### ***Other Waters***

One ephemeral drainage (**Figure 3.5-4**) occurs in the study area. The ephemeral drainage appears to begin approximately 500 feet north of the WWTP property boundary. The ephemeral drainage flows southward through the WWTP property and empties into Wetland B in the southeast corner of the study area. Between Merrick Road and the northern boundary of the WWTP, the ephemeral drainage is a rock lined channel approximately 2-3 feet in width. The ephemeral drainage has been historically realigned and channelized through the WWTP and in the study area is a rock-lined channel approximately two feet wide. In the study area, the drainage lacks an ordinary high-water mark (OHWM). Vegetation in the ephemeral drainage is sparse and consists primarily of upland grasses and forbs found in the ruderal/developed areas. In the southwestern portion of the study area, the drainage flows through a culvert under Merrick Road and empties into Wetland B.

#### ***Isolated Wetlands and Other Waters***

Wetlands and other waters that are “isolated” are not subject to USACE jurisdiction. Wetlands A and B do meet the criteria necessary to define them as “wetlands”. However, because the wetlands and associated ephemeral drainage in the study area are not adjacent to a water of the U.S. they may be considered “isolated” and therefore not subject to USACE jurisdiction under Section 404 of the Clean Water Act as discussed in **Section 3.5.2**. The discussion below focuses on connectivity between Wetland B and the Russian River because Wetland A and the ephemeral drainage in the study area are adjacent to Wetland B.

The portion of the redwood forest community between Wetland B and the Russian River was surveyed on foot to determine if there was an apparent surface connection between Wetland B and the Russian River.

The redwood forest community extends southward from the WWTP property to the Russian River. No defined channels run from the vicinity of the project site to the Russian River. There is a swale that carries water away from Wetland B; however it loses definition approximately 200 feet south of Wetland B and ends in a depression. Beyond the location of the depression, there is no evidence of flow continuing toward the Russian River, which is approximately 500 feet south of the depression. Water likely ponds in the depression during high flow periods and percolates into the ground. In a normal year, no surface hydrologic connection is expected between Wetland B and the Russian River.

### **TREES**

Within the study area there are four tree species that are covered by the Sonoma County Tree Protection and Replacement Ordinance (ordinance number 4014): redwood, coast live oak, California laurel, and big-leaf maple. Trees were surveyed within the project footprint. Fifty trees of at least 9-inch diameter at breast height (dbh) occur within the project footprint (**Table 3.5-1**). Most of these trees are redwoods. Based on aerial photography, the number of trees within the project footprint is less than 10 percent of the total number of trees occurring within the WWTP boundaries.

**TABLE 3.5-1  
TREES WITHIN THE PROJECT FOOTPRINT**

<b>Diameter at Breast Height</b>	<b>Coast Live Oak</b>	<b>Redwood</b>	<b>California Laurel</b>	<b>Big-leaf Maple</b>
9-15 inches	4	21	1	1
>15-21 inches	0	2	0	0
>21-27 inches	1	2	0	0
>27-33 inches	2	16	0	0

Source: AES, 2006

### **WILDLIFE**

Wildlife species observed in the study area were mostly birds. Some mammals, reptiles, and amphibians were also observed. Barn swallows (*Hirundo rustica*) and tree or violet-green swallows (*Tachycineta* sp.) were observed foraging while flying over the ruderal grassland habitat. In the mixed evergreen forest and willow scrub habitats, species such as black-tailed deer (*Odocoileus hemionus*), California towhee (*Pipilo crissalis*), Anna's hummingbird (*Calypte anna*), and California quail (*Callipepla californica*) were observed. In the redwood forest, wildlife species such as the northern alligator lizard (*Elgaria coerulea*), hermit thrush (*Catharus guttatus*) and Steller's jay (*Cyanocitta stelleri*) were observed. Some species were observed in the redwood forest habitat, as well as in the mixed evergreen forest and willow scrub habitats. Such species include the Pacific tree frog (*Hyla regilla*), black-headed grosbeak (*Pheucticus melanocephalus*), and spotted towhee (*Pipilo maculatus*). East of the study area, at existing equalization ponds within the WWTP property, pond sliders (*Trachemys scripta*) were observed.



### ***SPECIAL-STATUS SPECIES ASSESSMENT***

For the purposes of this DEIR, “special-status” is defined to include those species that are:

- Listed as endangered or threatened under the Federal Endangered Species Act (or formally proposed, or candidates, for listing);
- Listed as endangered or threatened under the California Endangered Species Act (or proposed for listing);
- Designated as endangered or rare, pursuant to California Department of Fish and Game (CDFG) Code (§1901);
- Designated as fully protected, pursuant to CDFG Code (§3511, §4700, or §5050);
- Designated as species of concern or species of local concern by USFWS, or as species of special concern by CDFG;
- Plants or animals that meet the definitions of rare or endangered under CEQA;
- Plants listed as rare under the California Native Plant Protection Act; or
- Plants considered by the California Native Plant Society (CNPS) to be “rare, threatened, or endangered in California” (Lists 1A, 1B, 2, 3, and 4).

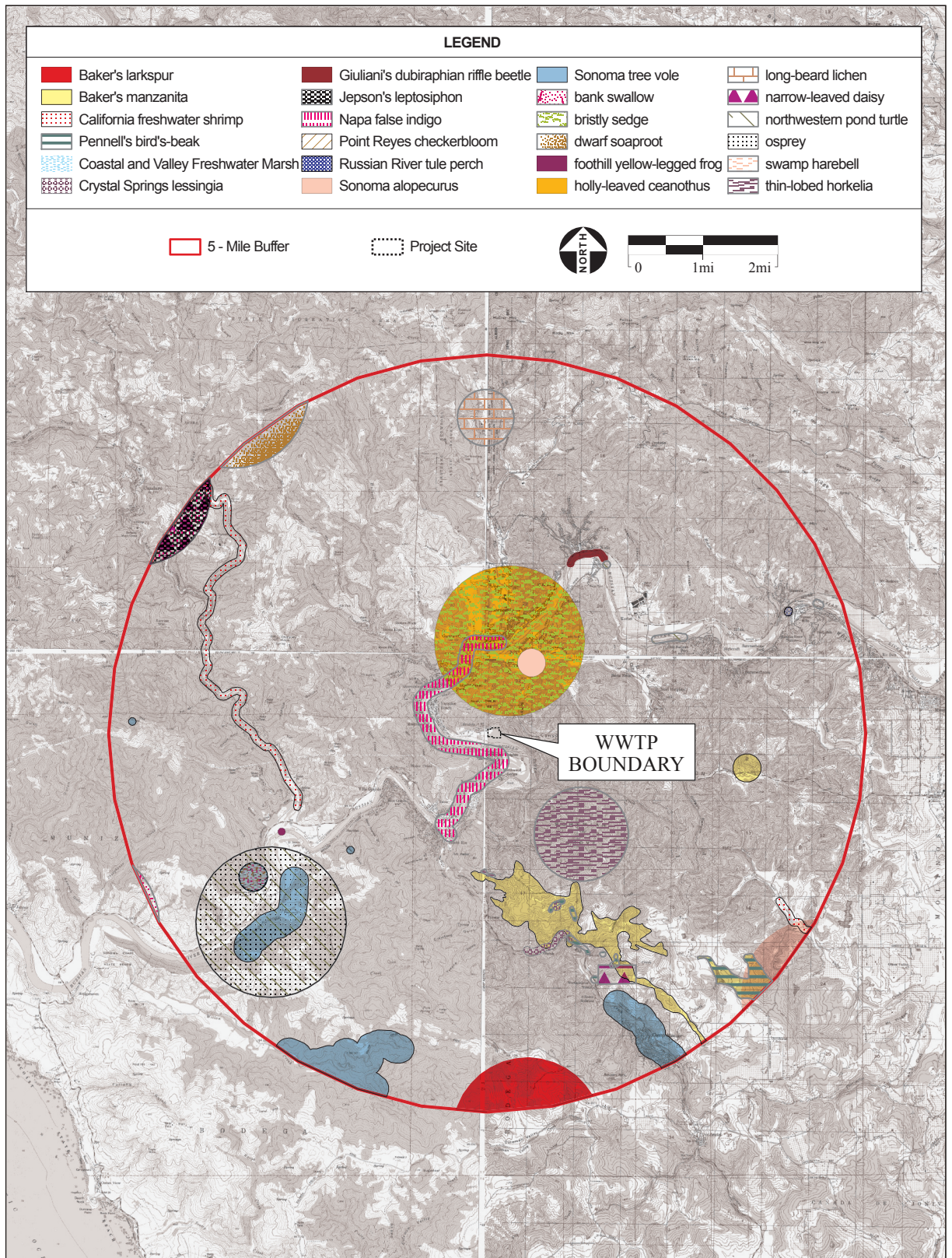
A list of regionally occurring special-status plant and wildlife species was compiled based on a review of pertinent literature; a field assessment; informal consultation with the U.S. Fish and Wildlife Service (USFWS; **Appendix D**); the results of a California Natural Diversity Data Base (CNDDB) query of all reported occurrences of special-status species within the Camp Meeker and Duncan Mills topographic quadrangles (**Appendix D**); the results of a CNPS Online Inventory query of special-status plants occurring within the Camp Meeker and Duncan Mills topographic quadrangles (**Appendix D**); and the results of a CNDDB query of all reported occurrences of special-status species within five miles of the project site (**Figure 3.5-5**; summary of query results in **Appendix D**).

Based upon the review of regionally occurring special-status species and the results of the field assessments, the project areas and/or surrounding vicinity represent potential habitat for seven special-status plant and two special-status animal species. The name, regulatory status, and period of identification of potentially occurring special-status species are identified in **Table 3.5-2**.

### ***Plants***

#### ***Wetland Plants***

The project site contains potentially suitable habitat for four wetland-adapted special-status plant species: Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*), swamp harebell (*Campanula californica*), bristly sedge (*Carex comosa*), and North Coast semaphore grass (*Pleuropogon hooverianus*). Three of these species have been observed within five miles of the project site: Sonoma alopecurus, swamp



SOURCE: "Camp Meeker, CA" USGS 7.5 Minute Topographic Quadrangle, Section 5, T7N, R10W, Mt. Diablo Baseline & Meridian; California Natural Diversity Database, 2005; AES, 2006

Russian River Basin Storage Project EIR / 205554 ■

**Figure 3.5-5**  
Special Status Species Map

harebell, and bristly sedge. Field surveys were conducted during the blooming period for all four of the wetland special-status plant species. None of the four special-status plant species were observed during field surveys. Therefore, the four species are not believed to occur on the project site.

#### *Upland Plants*

The project site contains potentially suitable habitat for three upland special-status plant species: Napa false indigo (*Amorpha californica* var. *napensis*), thin-lobed horkelia (*Horkelia tenuiloba*), and showy Indian clover (*Trifolium amoenum*). Two of these species have been observed within five miles of the project site: Napa false indigo and thin-lobed horkelia. Field surveys were conducted during the blooming period for all three of the upland special-status plant species. None of the three special-status plant species were observed during field surveys. Therefore, the three species are not believed to occur on the project site.

#### *Animals*

##### *Reptiles*

#### **Northwestern Pond Turtle (*Clemmys marmorata marmorata*)**

The northwestern pond turtle (NWPT) is found along ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. They prefer habitats with stable banks and open areas to bask in, as well as underwater cover provided by logs, large rocks, bulrushes, or other vegetation. During warmer periods they may be found basking along shorelines or within the vegetation along the edges of these environments. This species usually leaves the aquatic site to reproduce, to aestivate, and to overwinter. Recent fieldwork has demonstrated that western pond turtles may overwinter on land or in water, or may remain active in water during the winter season; this pattern may vary considerably with latitude and habitat type and remains poorly understood.

NWPT has been observed along the Russian River, within five miles of the project site. Suitable aquatic habitat for the NWPT does not occur within the study area. Suitable aquatic habitat occurs east of the study area in the two storage ponds within the WWTP property. The pond slider, a non-native turtle species often sold as a pet, has been observed at the two storage ponds east of the study area during field assessments. Though the NWPT has not been observed during field assessments, it could potentially use the two storage ponds east of the study area. Due to the proximity of the study area to suitable habitat, the study area may occasionally be utilized by the NWPT for basking, overwintering, breeding, or aestivation.

Wetlands in the study area contain shallow depressions that pond during the wet season. These shallow, ponded depressions are not of sufficient depth or quality to constitute suitable aquatic habitat; however, the NWPT may occasionally utilize them, and may utilize the site's upland habitat for basking, overwintering, breeding, or aestivation.



**TABLE 3.5-2  
POTENTIALLY OCCURRING SPECIAL-STATUS SPECIES**

SCIENTIFIC NAME COMMON NAME	FEDERAL/STATE/ CNPS STATUS	DISTRIBUTION	HABITAT REQUIREMENTS	PERIOD OF IDENTIFICATION
<b>PLANTS</b>				
<i>Alopecurus aequalis</i> var. <i>sonomensis</i> Sonoma alopecurus	FE/--/1B	Sonoma and Marin Counties.	Freshwater marshes and swamps, and riparian scrub habitats. Occurs below approximately 200 meters.	May – July
<i>Amorpha californica</i> var. <i>napensis</i> Napa false indigo	--/--/1B	Primarily Marin, Napa, and Sonoma Counties; also Monterey County.	Chaparral, woodland, and openings in broadleaf forest.	April – July
<i>Campanula californica</i> swamp harebell	--/--/1B	Mendocino, Marin, Sonoma, and Santa Cruz Counties.	Found in closed-cone forests, coastal dune areas, meadows, marshes, and swamps, generally in mesic areas.	June – October
<i>Carex comosa</i> bristly sedge	--/--/2	In California, North Coast Ranges, Cascade Range, Modoc Plateau, Central Valley, Central Coast, San Francisco Bay Area, and Transverse Ranges.	Wet places, particularly in coastal prairie, marshes and swamps at lake margins, and valley and foothill grasslands.	May – September
<i>Horkelia tenuiloba</i> thin-lobed horkelia	--/--/1B	Mendocino, Marin, and Sonoma Counties.	Sandy, mesic openings in broadleaved upland forest, chaparral, and valley and foothill grassland.	May – July
<i>Pleuropogon hooverianus</i> North Coast semaphore grass	--/CT/1B	Mendocino, Sonoma, and Marin Counties.	Meadows, seeps, and open, mesic areas in broadleaved forest and coniferous forest.	April - June
<i>Trifolium amoenum</i> showy Indian clover	FE/--/1B	San Francisco Bay Area and southern North Coast Ranges.	Grassland and coastal bluff scrub, sometimes in serpentine soil.	April - June
<b>ANIMALS</b>				
<b>Reptiles</b>				
<i>Clemmys marmorata marmorata</i> northwestern pond turtle	--/CSC/--	In California, primarily north of the San Francisco Bay Area and west of the Sierra Nevada Range. Elevations range from sea level to approximately 5,000 feet.	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg laying. Nest sites most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks.	March - October
<b>Mammals</b>				
<i>Antrozus pallidus</i> pallid bat	--/CSC/--	Much of western North America, from central Mexico to British Columbia. In California, throughout most of state.	Especially common in open lowland areas, generally below 2,000 m. Roosts in cliffs, abandoned buildings, bird boxes, and under bridges.	All Year

**STATUS CODES: FEDERAL: U.S. Fish and Wildlife Service and National Marine Fisheries Service**

FE Listed as Endangered by the Federal Government

**STATE: California Department of Fish and Game**

CT Listed as Threatened by the State of California

CSC California Species of Special Concern

**CNPS: California Native Plant Society**

List 1B Plants rare or endangered in California and elsewhere

List 2 Plants rare or endangered in California, but more common elsewhere

SOURCE: U.S. Fish and Wildlife Service, 2006; CDFG, 2003.



### *Mammals*

#### **Pallid Bat (*Antrozus pallidus*)**

The pallid bat is most commonly found in dry, open habitats with rocky areas for roosting. The pallid bat has three different roosts. The day roost is usually in a warm horizontal opening such as in attics or rock cracks; the night roost is usually in the open, near foliage; and the hibernation roost, which is often in buildings, caves, or cracks in rocks. Within Sonoma County, pallid bats have been observed on several instances. Most commonly the bats were roosting in buildings or under bridges.

The project site serves as potential foraging habitat for pallid bats. Pallid bats have potential roosting habitat at buildings near the project site. Roosting habitat does not, however, occur on the project site.

### *Nesting Birds*

Suitable nesting habitat occurs in the redwood forest for raptor species. Suitable nesting habitat occurs in the mixed woodland, redwood forest, and willow scrub habitats for migratory and non-migratory bird species. Nesting habitat at the site occurs primarily in trees and shrubs.

## **3.5.3 REGULATORY SETTING**

The following section summarizes the federal and state regulation of special-status species and “waters of the US,” as well as the county tree ordinance.

### **FEDERAL**

#### ***Federal Endangered Species Act***

The United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) enforce the provisions as stipulated within the Federal Endangered Species Act of 1973 (hereafter, “FESA,” 16 USC Section 1531 *et seq.*). Threatened and Endangered Species on the Federal list (50 CFR Section 17.11, 17.12) are protected from take, defined as direct or indirect harm, unless a Section 10(a)(1)(B) permit is granted or a Biological Opinion with incidental take provisions is rendered.

Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction, must determine whether any Federally-listed species may be present in the study area and determine whether the proposed project will have a potentially significant impact upon such species. Under FESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species that is proposed for listing under FESA or to result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation.

***Migratory Bird Treaty Act***

The Migratory Bird Treaty Act of 1918 (MBTA) (16 USC Sections 703-712) makes it unlawful to pursue, capture, kill, possess or attempt to do the same to any migratory bird, part, nest or egg listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan and the countries of the former Soviet Union. These birds are identified on a list in 50 CFR Section 10.13. As with FESA, the MBTA authorizes the Secretary of the Interior to issue permits for incidental take. Nesting birds and the contents of nests within the construction area are protected pursuant to the MBTA.

***Magnuson-Stevens Fishery Conservation and Management Act***

Enforced by the National Marine Fisheries Service (NMFS, also known as the National Oceanic and Atmospheric Administration Fisheries, or NOAA Fisheries), the Magnuson-Stevens Fishery Conservation and Management Act's immediate purpose is to conserve and manage the fishery resources found off the coasts of the United States, anadromous species and continental shelf fishery resources. The conservation and management of these highly migratory species is addressed through the implementation and enforcement of international fishery agreements. The Act achieves its purpose through the promotion of domestic, commercial and recreational fishing under sound conservation and management principles, the implementation of fishery management plans to achieve the optimum yield from each fishery on a continuing basis, the establishment of regional fishery management councils to exercise sound judgment in the stewardship of fishery resources, the development of underutilized or not utilized fisheries, and the protection of essential fish habitat (EFH) in the review of projects conducted under federal permits, licenses, or other authorities that affect or have the potential to affect such habitat. Federal agencies are required to consult with NMFS prior to authorizing or conducting projects within EFH.

***Federal Clean Water Act***

The US Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the US, including wetlands, under Section 404 of the Clean Water Act. Section 404 regulates the discharge of dredged and fill material into waters of the US. The USACE requires that a permit be obtained if a project proposes placing structures within, over, or under navigable waters and/or discharging dredged or fill material into waters of the US below the OHWM. The Environmental Protection Agency (EPA), USFWS, NMFS, and several other agencies provide comment on USACE permit applications. The USACE has established a series of nationwide permits (NWP) that authorize certain activities in waters of the US, provided that the proposed activity could demonstrate compliance with standard conditions. Normally, the USACE requires Individual Permits (IP) for work activities that do not qualify for a NWP. Wetlands and other waters that lack hydrologic connection to navigable waters of the US and that lack a nexus to interstate and foreign commerce, are not regulated by the *Clean Water Act* and do not fall under the jurisdiction of the USACE. Such features are called "isolated."

Water quality certification pursuant to Section 401 applies to projects and project applicants that have applied for a federal permit to conduct any activity, including construction or operation of facilities,

which may result in discharge into navigable waters. The State Water Resources Control Board, acting through the Regional Water Quality Control Board, must certify that an USACE permit action meets state water quality objectives.

## **STATE**

### ***State Endangered Species Act (California Fish and Game Code, Section 2080)***

The California Endangered Species Act (CESA) is similar to FESA but is limited to State-listed threatened and endangered species. CESA prohibits the take of State-listed threatened and endangered species. Additionally, the California Department of Fish and Game (CDFG) maintains a list of species of special concern, which serves as a “watch list.” Under CESA, State agencies are required to consult with the CDFG when preparing CEQA documents. Consultation ensures that proposed projects or actions do not have a negative effect on State-listed species or State species of special concern. During consultation, CDFG determines whether take would occur and identifies “reasonable and prudent alternatives” for the project and conservation of wildlife species. CDFG can authorize take if the applicant “obtains from the Secretary of the Interior or the Secretary of Commerce an incidental take statement pursuant to Section 1536 of Title 16 of the United States Code or an incidental take permit pursuant to Section 1539 of Title 16 of the United States Code that authorizes the taking of an endangered species or a threatened species that is listed pursuant to Section 1533 of Title 16 of the United States Code.” However, no permit can be issued if its issuance would “jeopardize the continued existence of the species;” and impacts of the authorized take must be minimized and fully mitigated.

### ***CEQA Guidelines Section 15380***

Although threatened and endangered species are protected by specific federal and state statutes, CEQA *Guidelines* Section 15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet specified criteria. These criteria have been modeled after the definition in the FESA and the section of the California Fish and Game Code defining rare or endangered plants and animals. Section 15380(d) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFG (i.e., candidate species) would occur. Thus, CEQA provides an agency with the ability to protect a species from a project’s potential impacts until the respective government agencies have an opportunity to designate the species as protected.

### ***California Fish and Game Code (Sections 3503, 3511, and 3800)***

California Fish and Game Code Section 3503, 3503.5 prohibit the take or needless destruction of bird nests or eggs; and prohibit the take, possession and destruction of birds-of-prey (birds of the orders Strigiformes and Falconiformes, which are owls, falcons and hawks). California Fish and Game Code Section 3511 lists birds that are “fully protected,” which may not be taken or possessed except under specific permit. Depending on the presence of special-status species or nesting raptors during periods of project construction, consultation with the CDFG, may be necessary. California Fish and Game Code

Section 3800 prohibits the take of nongame birds. Nongame birds are defined as, “All birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds.”

### ***Section 1600 of the California Fish and Game Code***

Under the California Fish and Game Code Sections 1600-1607, CDFG is authorized to develop mitigation measures and enter into Streambed Alteration Agreements with applicants whose projects would obstruct the flow of, or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams. All diversions, obstructions, or changes to natural flow or bed, channel, or bank of any river, stream or lake in California are subject to the regulatory authority of CDFG pursuant to sections 1600 through 1607 of the State Fish and Game Code. California Fish and Game Code Sections 1600-1607 require notification to the CDFG of any activity that could affect the bank or bed of any stream that has value to fish and wildlife. Upon notification, the CDFG has the responsibility to prepare a Streambed Alteration Agreement, in consultation with the project proponent.

### ***COUNTY OF SONOMA***

#### ***Sonoma County Tree Protection and Replacement Ordinance (Ordinance Number 4014)***

Several tree species are protected by the County of Sonoma: big-leaf maple (*Acer macrophyllum*), black oak (*Quercus kelloggii*), blue oak (*Quercus douglasii*), coast live oak (*Quercus agrifolia*), interior live oak (*Quercus wislizenii*), madrone (*Arbutus menziesii*), oracle oak (*Quercus morehus*), Oregon oak (*Quercus garryana*), redwood (*Sequoia sempervirens*), valley oak (*Quercus lobata*), California bay (*Umbellularia californica*), and their hybrids. Numerical values (arboreal value) are assigned to trees based on their trunk diameters. Compensation for removal of protected trees is calculated in either of two manners, determined by the applicant at the time of application. Option 1 involves analysis of trees only within the development area. This option requires 100 percent replacement of arboreal value or in lieu of payment fees. Option 2 involves analysis of trees in the entire site. This option allows for removal of 50 percent of the site's arboreal value, and requires replacement of that loss which is over 50 percent of the arboreal value.

#### ***Sonoma County General Plan***

The Sonoma County General Plan (General Plan) outlines biological resource policies within the Open Space Element that regulate development within the General Plan planning area, which includes the project site. Policies that may relate to the Proposed Project include:

#### ***Open Space Policies***

- Policy OS-4c** Require the preparation of a biotic resource assessment to develop mitigation measures if the Planning Director determined that a discretionary project could adversely impact a designated critical habitat area.

- Policy OS-4e** Require on building permits a minimum setback of 50 feet from the edge of any wetlands which are within a critical habitat area.
- Policy OS-5e** Allow or consider allowing the following uses within any streamside conservation area:
- 3) Road crossing and street crossings, utility line crossings
- Policy OS-5f** Prohibit, except as allowed by OS-5e, structures, roads, and utility lines and parking lots within any streamside conservation area. Consider waiver of this prohibition if:
- 1) It makes a lot unbuidable and vegetation removal is minimized, or
  - 2) No significant disturbance of riparian habitat would occur.
- Policy OS-5h** Use the following criteria to determine whether or not public projects are consistent with this element:
- 2) Roadway and utility construction should seek to minimize and mitigate, where feasible, damage to riparian areas. Minimize vegetation removal for necessary stream crossing.
  - 3) All criteria established in policy OS-5f.
  - 4) Grading, filling, or construction shall not substantially diminish or divert any stream flow or result in any substantial increase in bank instability or erosion.

Sonoma County is currently in the process of updating its General Plan. The following policy changes that relate to biological resources are proposed within the General Plan 2020:

*Open Space and Resource Conservation Policies*

- Policy OSRC-7b** Rezone to the Biotic Resources combining district all lands designated as Biotic Habitat Areas. Adopt an ordinance that provides for protection of Biotic Habitat Areas in conformance with the following principles.
- Policy OSRC-7c** For discretionary projects and larger ministerial permits outside of designated Biotic Habitat Areas, send referrals to appropriate regulatory agencies and, where such agencies' comments or other agency information indicates sensitive biotic resources could be adversely affected, require site assessment and adequate mitigation.
- Policy OSRC-7d** Notify permit applicants of possible requirements of Federal and State regulatory agencies. Where the possible existence of jurisdictional wetlands or special-status species is discovered during permit review or site inspection, notify permit applicants of possible related requirements of Federal and State regulatory agencies.
- Policy OSRC-7i** Require the identification, preservation and protection of native trees and woodlands in the design of discretionary projects. To the maximum extent

practicable, minimize the removal of native trees and fragmentation of woodlands, require any trees removed to be replaced, preferably on the site, and provide permanent protection of other existing woodlands where replacement planting does not provide adequate mitigation.

**Policy OSRC-7p** Encourage the use of native plant species in landscaping, and for discretionary projects, require the use of native or compatible non-native species for landscaping and prohibit the use of invasive exotic species.

**Policy OSRC-8c** Rezone to the Biotic Resources combining zoning district all lands within the streamside conservation areas. Adopt an ordinance, which provides for their protection in conformance with the following principles.

**Policy OSRC-8e** As part of the environmental review process, refer discretionary permit applications near all designated and ephemeral streams to CDFG and other agencies responsible for natural resource protection and require site assessment and appropriate mitigation if riparian corridors, habitat or functions might be adversely affected, including riparian vegetation extending outside streamside conservation areas.

### 3.5.4 IMPACTS AND MITIGATION MEASURES

#### *SIGNIFICANCE CRITERIA*

The CEQA *Guidelines* Section 15065 directs lead agencies to find that a project may have a significant effect on the environment if it has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of an endangered, rare or threatened species. Appendix G of the CEQA *Guidelines* indicates that the project would have a significant impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified or listed in local or regional plans, policies, or regulations, or by the California Department of Fish and Game (CDFG), the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS).
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFG or USFWS.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means.

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

### ***ANALYSIS METHODOLOGY***

Information used in preparation of this section includes the Sonoma County Tree Protection and Replacement Ordinance, a U.S. Geological Survey (USGS) 7.5' topographic map, aerial photography, a query of the California Natural Diversity Database (CNDDB), informal consultation with the U.S. Fish and Wildlife Service (USFWS), the California Wildlife Habitat Relationships System (CWHRS), and results of a field assessment. The field assessment was conducted by AES on May 30 and 31, 2006. The assessment's purpose was to characterize existing habitat types, identify and delineate waters of the US, conduct a tree survey, and evaluate the potential for the occurrence of any special-status plant or wildlife species or other sensitive biological resources.

### ***IMPACTS AND MITIGATION MEASURES***

#### **Impact**

#### **3.5-1 Construction of the Proposed Project could result in impacts to special-status plant species. No impact.**

Seven special-status plant species have potentially suitable habitat within the project site: Sonoma alopecurus, Napa false indigo, swamp harebell, bristly sedge, thin-lobed horkelia, North Coast semaphore grass, and showy Indian clover. Surveys were conducted on the project site during the blooming periods of all seven of the species. None of these seven species was identified during any field survey. Accordingly, none of these seven species is believed to occur on the project site. Because no special-status plant species are believed to occur, ***no impact*** is expected.

#### **Mitigation Measure**

No mitigation is required.

#### **Impact**

#### **3.5-2 Construction of the Proposed Project could result in impacts to northwestern pond turtles. Less than Significant with Mitigation.**

Potential basking, overwintering, breeding, or aestivation habitat exists in the project site's uplands. The possibility also exists of northwestern pond turtles occasionally using the site's wetlands for foraging or dispersal. The possibility therefore exists of northwestern pond turtles

being taken during initial grubbing and clearing of the project site. Therefore, impacts to northwestern pond turtles would be considered *potentially significant*.

#### Mitigation Measure

- 3.5-2** A qualified biologist shall be present during initial grubbing and clearing activities to ensure that northwestern pond turtles are not harmed by construction activities. If a northwestern pond turtle is observed, the biologist will relocate the pond turtle to suitable habitat outside of the construction zone.

#### Significance after Mitigation

Implementation of the mitigation measure will ensure that northwestern pond turtles are not harmed during construction activities. Therefore, with mitigation this impact is *less than significant*.

#### Impact

- 3.5-3 Construction of the Proposed Project could adversely affect special-status bat species. Less than Significant.**

Roosting habitat does not occur on the project site. Approximately 0.5 acre of potential foraging habitat for the pallid bat occurs on the project site. Construction of the storage basin will result in the loss of approximately 0.4 acre of foraging habitat. The region supports extensive foraging habitat for the pallid bat. The loss of approximately 0.4 acre of foraging habitat is a *less than significant* impact.

#### Mitigation Measure

No mitigation is required.

#### Impact

- 3.5-4 Construction of the Proposed Project could result in impacts to nesting birds, including raptors, if present. Less than Significant with Mitigation.**

Nesting birds may utilize the onsite redwood forest, woodland, and willow scrub. Initial tree-removal, grubbing, and clearing would impact any nests contained within the suitable habitats. Therefore, impacts to nesting birds, including raptors would be considered *potentially significant*.

#### Mitigation Measure

- 3.5-4** If feasible, grubbing and grading activities shall be conducted outside of the nesting season. The nesting season is considered to be mid-February through mid-September. If initial tree-removal, grubbing or clearing activities will occur during the nesting season, a pre-construction survey for nesting bird species shall be conducted by a qualified biologist within proposed vegetation removal areas, including a 500-foot buffer from construction activities. The survey shall be



conducted within 14 days of the start of grubbing or grading activities. If no nesting is found, significant impacts are not anticipated.

If active nests are identified in these areas, vegetation removal shall be postponed until a qualified biologist has determined the young have fledged and the nest is no longer active. No active nests shall be disturbed without a permit or other authorization from USFWS and CDFG. If active nests are identified in the project site, a minimum 500-foot buffer for raptors and 250-foot buffer for other nesting birds found shall be established to prevent abandonment of the nest and nest failure.

### Significance after Mitigation

Implementation of the mitigation measure will ensure that construction activities will not harm nesting birds. Therefore, with mitigation this impact is considered *less than significant*.

### Impact

#### **3.5-5 Construction of the Proposed Project could result in impacts to Waters of the US, if determined to be present on the project site. Less than Significant with Mitigation.**

Two wetlands and one seasonal drainage occur within the project site. The jurisdictional status of both wetlands and the drainage has not yet been determined. A delineation of Waters of the US has been conducted, and the ensuing report filed with the USACE. The USACE will determine whether it has jurisdiction over the wetlands and drainage, following a verification of the delineation. The wetlands and drainage do not appear to connect hydrologically to the Russian River or any other Waters of the US and are therefore not expected to be considered jurisdictional.

Within the project area, Wetland A occupies 0.16 acres, Wetland B occupies 0.17 acres, and the drainage occupies 0.03 acres. Total waters within the project site occupy 0.36 acres. Of these 0.36 acres, 0.32 acres of waters will be filled by construction of the storage basin. If the waters are found to be connected to Waters of the US, impacts to the onsite waters could impact Waters of the US, resulting in a *significant impact*. If the wetlands and drainage are found to be isolated from Waters of the US, impacts to them would not impact Waters of the US. Because the site's waters do not support special-status species, *no impact* would be expected if the site's waters are determined to be isolated from Waters of the US.

### Mitigation Measure

#### **3.5-5 Construction activities resulting in the discharge of dredged or fill material into Waters of the US will require permit approval from the USACE and water quality certification from the NCRWQB pursuant to Section 401 of the Clean Water Act. If the project site's drainage and two wetlands are determined to be under USACE jurisdiction, the USACE will require a 401 Water Quality**

Certification permit from the NCRWQCB prior to issuance of a 404 permit. The Proposed Project would most likely be authorized under Nationwide 39 permit pursuant to Section 404 of the Clean Water Act. Any compensatory mitigation shall be provided as required by regulatory permits to offset impacts to Waters of the US. Compliance with full mitigation, as required by regulatory permits, would ensure that measures are implemented to avoid, compensate, or offset impacts to Waters of the US.

If the project site's drainage and two wetlands are determined to be under USACE jurisdiction, mitigation shall follow USACE guidelines. Wetlands shall be mitigated through purchase of credits at an approved mitigation bank; in-lieu of payment fees; creation, enhancement, or preservation of wetlands; or some combination thereof. Mitigation for acres of wetlands filled shall be at a ratio of no less than 1:1. Consistent with USACE guidelines, wetlands shall be mitigated in a manner that achieves no net loss of wetland functions and values. Monitoring of created or enhanced wetlands shall be conducted in accordance with the permit.

### **Significance after Mitigation**

Adherence to USACE guidelines as required by the mitigation measure will assure that measures are implemented to avoid, compensate, or offset impacts to Waters of the US. Wetlands shall be mitigated in a manner that achieves no net loss of wetland functions and values. Therefore, after mitigation impacts to Waters of the US are *less than significant*.

### **Impact**

#### **3.5-6 Construction of the Proposed Project could result in impacts to waters subject to California Fish and Game Code Section 1600. Less than Significant with Mitigation.**

One 0.03-acre seasonal drainage occurs within the project site. It has previously been realigned, and has no associated riparian corridor. This seasonal drainage will be filled by construction of the storage basin, and rerouted through a culvert on the project site. This fill will result in a *significant impact* to waters subject to Section 1600 of the CDFG Code.

### **Mitigation Measure**

**3.5-6** Any project in California which will cause alteration to the bed, bank, or channel of a drainage will require a Streambed Alteration Agreement pursuant to Section 1600 of the California Fish and Game Code. A Streambed Alteration Agreement shall be entered into with CDFG, in accordance with Sections 1600 – 1616 of the California Fish and Game Code. The District shall comply with all terms and conditions of the Agreement, and any compensatory mitigation shall be in place prior to any direct effects to the seasonal drainage.

**Significance after Mitigation**

Compliance with the terms of the Streambed Alteration Agreement would ensure that measures are implemented to avoid, minimize, or offset impacts to the seasonal drainage present on the project site. Therefore, after mitigation impacts to waters subject to Section 1600 of the California Fish and Game Code are *less than significant*.

**Impact****3.5-7 Construction of the Proposed Project would result in the removal of trees. Less than Significant.**

The Proposed Project would remove 50 trees with dbh of at least nine inches. The project vicinity supports an abundance of redwood forest. The Proposed Project would remove less than 10 percent of the trees present within the WWTP, and a far lower percentage of the trees present in the vicinity. According to the Sonoma County Tree Protection and Replacement Ordinance (Ordinance Number 4014; see discussion in Regulatory Setting), compensation for tree removal would not be required. Additionally, the District plans to replace trees lost onsite during construction to the extent feasible. Therefore, tree removal for the Proposed Project is considered a *less than significant* impact.

**Mitigation Measure**

None required.

## 3.6 NOISE

### 3.6.1 INTRODUCTION

This section addresses the potential for the Proposed Project to create noise impacts. Following an overview of the noise setting in **Subsection 3.6.2** and the relevant regulatory setting in **Subsection 3.6.3**, project-related impacts and recommended mitigation measures are presented in **Subsection 3.6.4**.

### 3.6.2 NOISE SETTING

#### *FUNDAMENTALS OF ACOUSTICS*

Noise is often described as unwanted sound, and thus is a subjective reaction to the physical phenomenon of sound. Sound is created by variations in air pressure that the ear can detect. The ear responds to pressure changes over a range of  $10^{14}$  to 1. This is roughly equivalent to the range of 1 second as compared to 3.2 million years, or 1 square yard compared to the entire surface area of the earth. To deal with the extreme range of pressures which the ear can detect, researchers express the amount of acoustical energy of a sound by comparing the measured sound pressure to a reference pressure, then taking the logarithm (base 10) of the square of that number. This original unit of sound measurement, named the bel after Alexander Graham Bell, corresponded well to human hearing characteristics if it was divided by a factor of 10. The resulting unit, one tenth of a bel, is called the decibel, and is abbreviated as dB.

The threshold of hearing is considered to be zero (0) dB, and the range of sounds in normal human experience is 0 to 140 dB. Because sound pressure levels are defined as logarithmic numbers, the values cannot be directly added or subtracted. For example, two sound sources, each producing 50 dB, will produce 53 dB when combined, not 100 dB. This is because two sources have two times the energy of one source, and 10 times the logarithm of 2 equals 3. Similarly, ten sources produce a 10 dB higher sound pressure level than one source, as ten times the logarithm of 10 equals 10.

The ear responds to pressure variations in the air from about 20 times per second to about 20,000 times per second. The frequency of the variations is described in terms of hertz (Hz), formerly called cycles per second. The ear does not respond equally to all frequencies. For example, we do not hear very low frequency sounds as well as we hear higher frequency sounds, nor do we hear very high frequency sounds very well. This difference in perceived loudness varies with the sound pressure level of the sound. In general, the maximum sensitivity of the ear occurs at frequencies between about 500 and 8000 Hz.

To compensate for the fact that the ear is not as sensitive at some frequencies and sound pressure levels as at others, a number of frequency weighting scales have been developed. The "A" weighting scale is most commonly used for environmental noise assessment, as sound pressure levels measured using an A-weighting filter correlate well with community response to noise sources such as aircraft and traffic.

When an A-weighting filter is used to measure sound pressure levels, the results may be expressed as *sound levels*, in decibels (dB). It is sufficient to use the abbreviation "dB" if these terms are well defined, but many people prefer to use the expressions dBA or dB(A) for clarity. For convenience, many people use the term "noise level" interchangeably with "sound level." **Table 3.6-1** shows typical sound levels and relative loudness for various types of noise environments.

**TABLE 3.6-1**  
EXAMPLES OF A-WEIGHTED SOUND LEVELS AND RELATIVE LOUDNESS

Sound	Sound Level (dBA)	Relative Loudness (approximate)	Relative Sound Energy
Jet aircraft, 100 feet	130	128	10,000,000
Rock music with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobile at low speed	50	1/2	.1
Average office	40	1/4	.01
City residence	30	1/8	.001
Quiet country residence	20	1/16	.0001
Rustle of leaves	10	1/32	.00001
Threshold of hearing	0	1/64	.000001

Source: U.S. Department of Housing and Urban Development, "Aircraft Noise Impact -- Planning Guidelines for Local Agencies," 1972.

The ambient noise level is defined as the existing range of noise levels from all sources near and far. A synonymous term is pre-project noise level. A similar term is background noise level, which usually refers the ambient noise level that is present when any intermittent noise sources are absent. Noise exposure contours or noise contours are lines drawn about a noise source representing constant levels of noise exposure. CNEL or  $L_{dn}$  (DNL) contours are frequently utilized to graphically portray community noise exposure. The terms CNEL and  $L_{dn}$  (DNL) are defined in the following section.

### ***ENVIRONMENTAL NOISE DESCRIPTORS***

Most environmental noise sources produce varying amounts of noise over time, so the measured sound levels also vary. For example, noise produced during a train passage will vary from relatively quiet

background levels before the event to a maximum value when the train passes by, then returning down to background levels as the train leaves the observer's vicinity. Similarly, noise from traffic varies with the number and types of vehicles, speed and proximity to the observer.

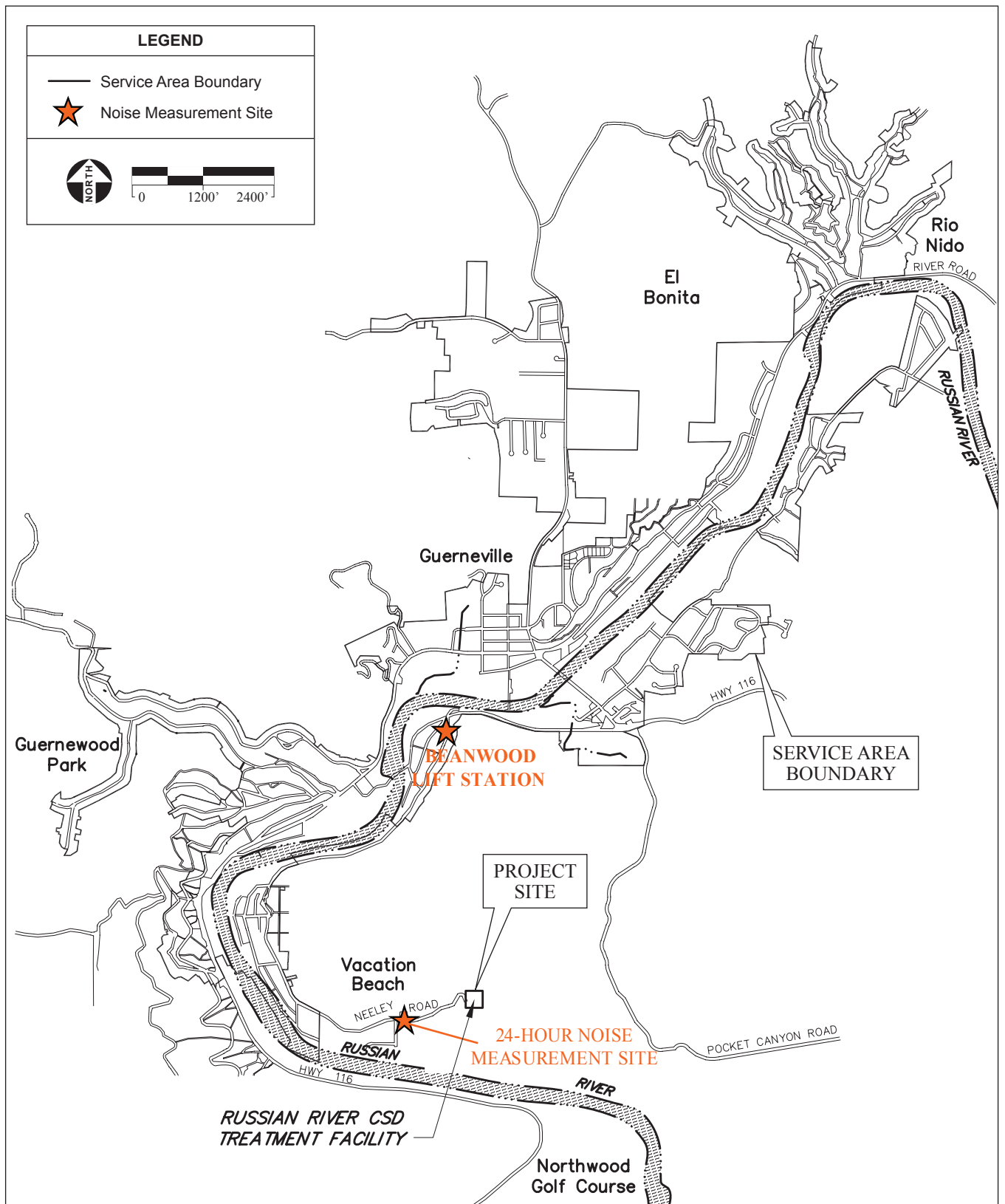
Variations in sound levels may be addressed by statistical methods. The simplest of these are the maximum ( $L_{\max}$ ) and minimum ( $L_{\min}$ ) noise levels, which are the highest and lowest levels observed. To describe less extreme variations in sound levels, other statistical descriptors may be used, such as the  $L_{10}$  and  $L_{50}$  and  $L_{90}$ . The  $L_{10}$  is the A-weighted sound level equaled or exceeded during 10 percent of a time period. Similarly, the  $L_{50}$  and  $L_{90}$  are the sound levels equaled or exceeded during 50 and 90 percent of a time period. (The  $L_{90}$  is often considered to describe the background noise level.) The most common time period used with these statistical descriptors is 1 hour, although any time period could be used as long as it is stated. Because statistical descriptors such as  $L_{10}$ ,  $L_{50}$ , etc. are sometimes cumbersome to calculate, the equivalent sound level ( $L_{eq}$ ) or energy average sound level is often used to describe the "average" sound level during stated time period, usually 1 hour.

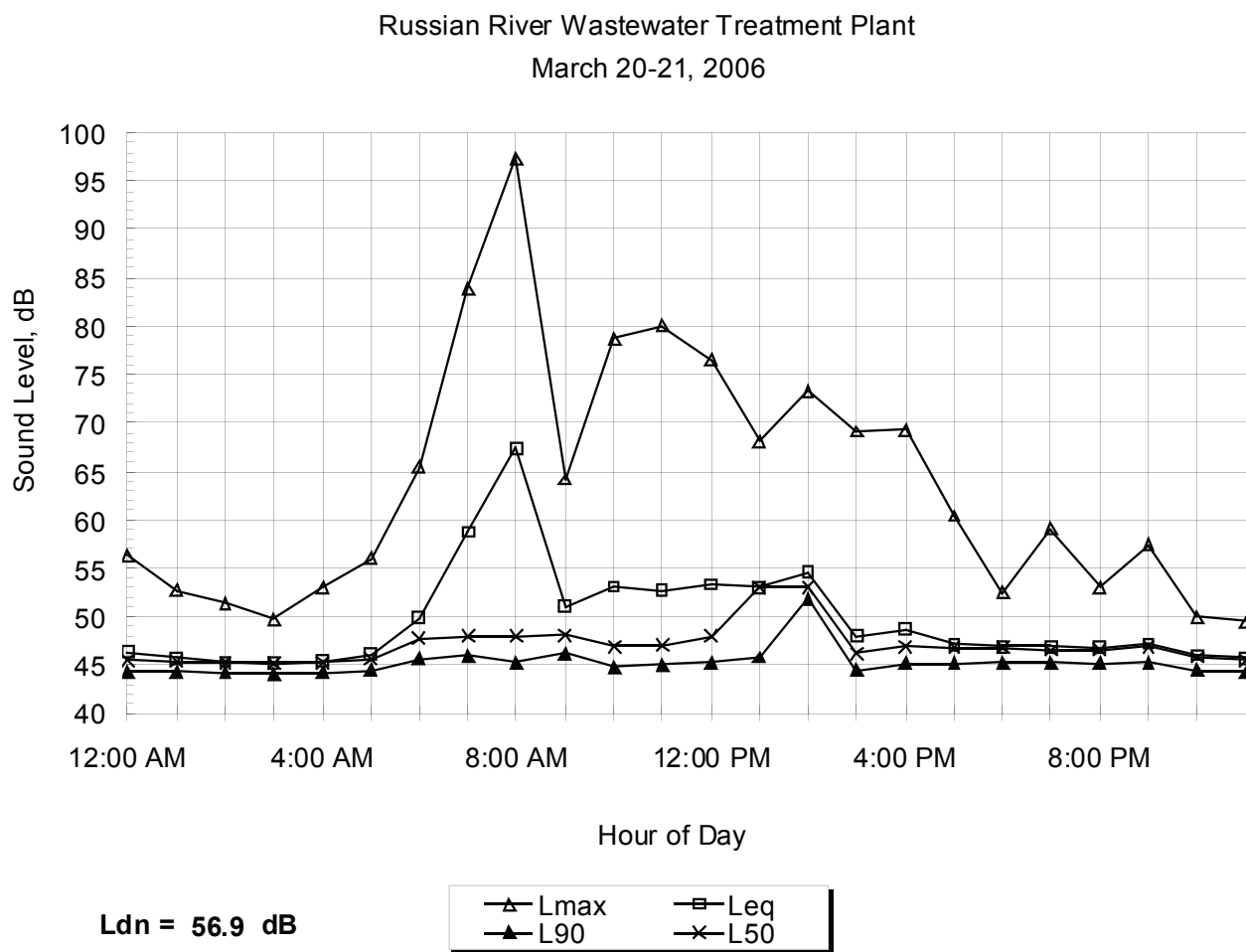
The Community Noise Equivalent Level (CNEL) is calculated from hourly  $L_{eq}$  values, after adding a "penalty" to the noise levels measured during the evening (7 p.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) periods. The penalty for evening hours is a factor of 3, which is equivalent to 4.77 dB. The penalty for nighttime hours is a factor of 10, which is equivalent to 10 dB. To calculate the day-night average sound level ( $L_{dn}$  or DNL), the evening penalty is omitted.

### **AMBIENT NOISE LEVELS**

Continuous noise measurements were conducted at a single location to provide a description of the existing ambient noise levels. The measurement site was adjacent to the west gate to the project site, which is adjacent to the nearest residences. The microphone mast was mounted on a gatepost. **Figure 3.6-1** shows the noise measurement site. Noise measurement equipment consisted of a Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meter, which was equipped with a B&K Type 4176 ½" microphone. The measurement equipment was calibrated immediately before and after use, and meets the specifications of the American National Standards Institute (ANSI) for Type 1 sound measurement systems.

**Figure 3.6-2** summarizes the hourly noise measurement data. These data show that the ambient noise levels are relatively constant over the 24-hour day. The exception occurred with the arrival of a vehicle and the subsequent operation of the gate in the morning, when an exceptionally loud noise was produced for a short time period. The measured  $L_{dn}$  was 56.9 dB. The background noise level of 44 to 45 dBA was produced by the blowers in a block building located about 200 feet from the gate. The ambient noise levels were within acceptable limits for residential uses.







Blowers and pumps currently operate at the existing wastewater treatment plant. The dominant noise source from the west of the facility is the blowers located in a concrete block building visible from the gate. Measurements of noise produced by these blowers were conducted on March 20, 2006, at a distance of 100 feet from the building. The average noise level (Leq) was 55.9 dB at this distance.

Noise measurement equipment consisted of a Larson Davis Laboratories (LDL) Model 824 precision integrating sound level meter, which was equipped with a Larson Davis Model 2541 microphone. The measurement equipment was calibrated immediately before and after use, and meets the specifications of the American National Standards Institute (ANSI) for Type 1 sound measurement systems.

The blower noise measurement indicated that the blower noise was relatively constant. **Figure 3.6-3** shows the measured frequency content of the blowers. Tonal noise was present in the range of 125 Hz to 200 Hz.

### ***SENSITIVE RECEPTORS***

Residences located along Neeley Road approximately 250 feet west of the WWTP are considered the nearest noise sensitive receptors. In the past, the District received several noise complaints when they replaced the mechanical aerators at the WWTP with blowers. In response to the complaints, the blowers were housed within a concrete block building to attenuate the noise levels (Cullen, 2006).

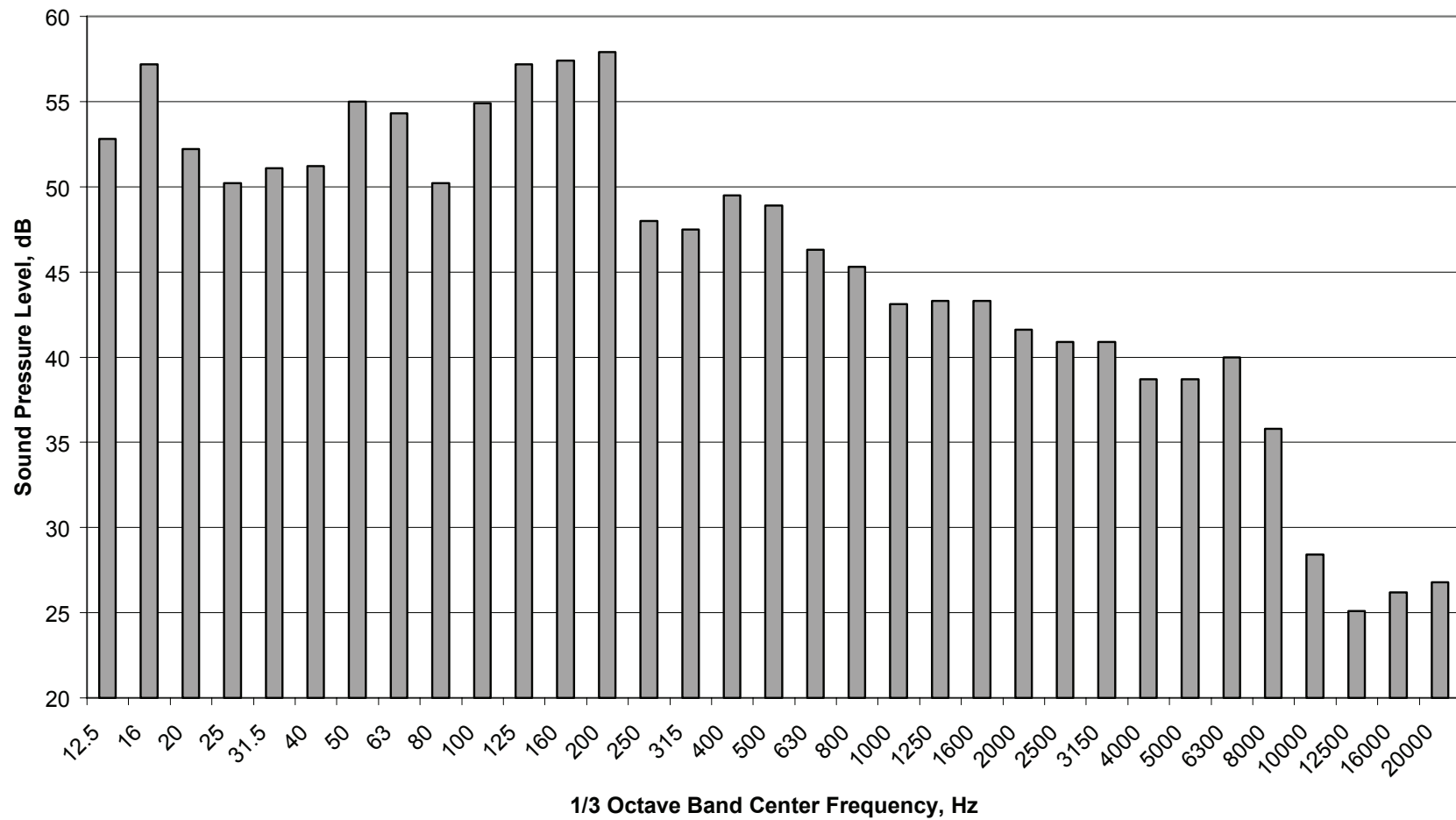
## **3.6.3 REGULATORY SETTING**

### ***SONOMA COUNTY GENERAL PLAN***

The criteria for evaluating noise impacts in Sonoma County are set forth in the Noise Element of the General Plan, adopted in 1988. The policies of the Noise Element include noise standards for locally regulated noise sources such as the lift station pumps associated with the Proposed Project. **Table 3.6-2** shows the noise performance standards for non-transportation noise sources. Sonoma County is currently in the process of updating its General Plan. In January 2006, the County released a Public Hearing Draft of the General Plan 2020. The Public Hearing Draft outlines a Noise Element with similar noise standards.

Policy NE-1a of the current version of the Noise Element of the Sonoma County General Plan designates areas within Sonoma County as “noise impacted” if they are exposed to existing or projected exterior noise levels exceeding 60 dB L<sub>dn</sub>, 60 dB CNEL, or the performance standards contained in **Table 3.6-2**.

Policy NE-1c addresses the control of non-transportation related noise from new projects. The total noise level resulting from new sources shall not exceed the standards in **Table 3.6-2** as measured at the exterior property line of any affected residential land use. Exceptions are limited to the following:



**Figure 3.6-3**  
Measured Frequency Spectrum (Blowers)

1. If the ambient noise level exceeds the standard in **Table 3.6-2**, adjust the standard to equal the ambient level.
2. Reduce the applicable standards in **Table 3.6-2** by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises.
3. Reduce the applicable standards in **Table 3.6-2** by 5 decibels if they exceed the ambient level by 10 or more decibels.

**TABLE 3.6-2**  
MAXIMUM EXTERIOR NOISE STANDARDS, DBA

Category	Cumulative Duration of Noise Event in Any One- Hour Period	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30 - 60 minutes	50	45
2	15 - 30 minutes	55	50
3	5 - 15 minutes	60	55
4	1 - 5 minutes	65	60
5	0-1 minutes	70	65

Note: For the purposes of this analysis, the noise standards of categories 1-5 are considered to be equivalent to the  $L_{50}$ ,  $L_{25}$ ,  $L_8$ ,  $L_2$  and  $L_{max}$ , respectively. Refer to the following discussion of acoustical fundamentals for definitions of these terms.

Source: Sonoma County, 2006

### 3.6.4 IMPACTS AND MITIGATION MEASURES

#### *SIGNIFICANCE CRITERIA*

CEQA requires that significant environmental impacts be identified, and that such impacts be eliminated or mitigated to the extent feasible. A significant effect from noise may exist if a project would result in:

- Exposure of persons to, or generation of, noise levels in excess of Policy NE-1a of the current version of the Noise Element of the Sonoma County General Plan (**Table 3.6-2**);
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Noise due to construction activities may be considered to be insignificant in terms of CEQA compliance if:

- The construction activity is temporary;
- Use of heavy equipment and noisy activities is limited to daytime hours;
- No pile driving or blasting is planned; and

- All industry-standard noise abatement measures are implemented for noise-producing equipment.

For non-transportation noise sources affecting noise sensitive land uses, Sonoma County considers an increase in ambient noise levels of 3 dBA to be potentially significant. This amount of change in environmental noise levels is generally considered to be perceptible, though not necessarily clearly noticeable, by most people.

Some additional guidance as to the significance of changes in ambient noise levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. The FICON recommendations are based upon studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a summary measure of the general adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment.

The rationale for the FICON recommendations is that it is possible to consistently describe the annoyance of people exposed to transportation noise in terms of  $L_{dn}$ . The changes in noise exposure that are shown in **Table 3.6-3** are expected to result in equal changes in annoyance at sensitive land uses. Although the FICON recommendations were specifically developed to address aircraft noise impacts, they are considered in this analysis for lift station noise described in terms of  $L_{eq}$ .

**TABLE 3.6-3**  
SIGNIFICANCE OF INCREASES IN CUMULATIVE NOISE EXPOSURE  
FOR TRANSPORTATION NOISE SOURCES

Ambient Noise Level Without Project ( $L_{dn}$ or CNEL)	Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON), 1992, as applied by Brown-Buntin Associates, Inc.

### ANALYSIS METHODOLOGY

This section identifies the Proposed Project's potential impacts on the existing noise setting of the surrounding environment. As described in detail in **Section 3.6-2**, noise measurements were conducted to determine the existing ambient noise levels on the project site and area of potential impacts. Impacts to the existing noise setting were analyzed based on anticipated increases in noise levels determined through noise measurements conducted at land uses similar to those proposed by the project, published information regarding noise environments, and field studies, and comparison of these factors to the

significance criteria listed above. If significant impacts are likely to occur, mitigation measures are included to increase the compatibility and safety of the Proposed Project and reduce impacts to less-than-significant levels.

## **IMPACTS AND MITIGATION MEASURES**

### **Construction Impacts**

#### **Impact**

#### **3.6-1 Construction of the Proposed Project could result in temporary impacts to noise sensitive receptors. Less than Significant with Mitigation.**

During the construction phase of the project, construction noise would dominate the noise environment in the immediate area. Construction noise would occur primarily during daytime hours as described in **Section 2.7.4**. The nearest potentially affected sensitive receivers would be the homes west of the entry gate, about 250 feet from the project site. Construction equipment would generate noise levels as indicated in **Table 3.6-4**. Maximum noise levels from different types of equipment under different operating conditions could range from 70 dBA to 90 dBA at a distance of 50 feet, or from about 64 to 84 dBA at the nearest house under worst-case conditions.

<b>TABLE 3.6-4</b>	
<b>TYPICAL CONSTRUCTION NOISE LEVELS</b>	
<b>Type of Equipment</b>	<b>Maximum Noise Level, dBA at 50 feet</b>
Scrapers	88
Bulldozers	87
Heavy Trucks	88
Backhoe	85
Pneumatic Tools	85
Forklifts	75

Source: Brown-Buntin Associates, 2006

The most important project-generated construction traffic noise source would likely be truck traffic associated with transport of heavy materials and equipment. Construction activities would be of short duration and limited primarily to daytime hours. Nevertheless, temporary noise increases due to construction activities associated with the Proposed Project could result in *potentially significant* impacts to nearby sensitive receptors.

#### **Mitigation Measure**

#### **3.6-1 Construction contractors shall implement the following mitigation measures to reduce daytime noise levels resulting from construction:**

- Fixed construction equipment (such as compressors and generators) and construction staging areas shall be located as far as feasible from the nearest residential housing;

- Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible); and,
- Construction equipment noise shall be minimized during project construction by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools.

### Significance After Mitigation

Implementation of the recommended measures will ensure that impacts resulting from short-term construction noise are reduced to *less than significant*.

### Operational Impacts

#### Impact

#### **3.6-2 The Proposed Project could adversely impact noise sensitive receptors through the introduction of noise generating equipment on the project site. Less than Significant.**

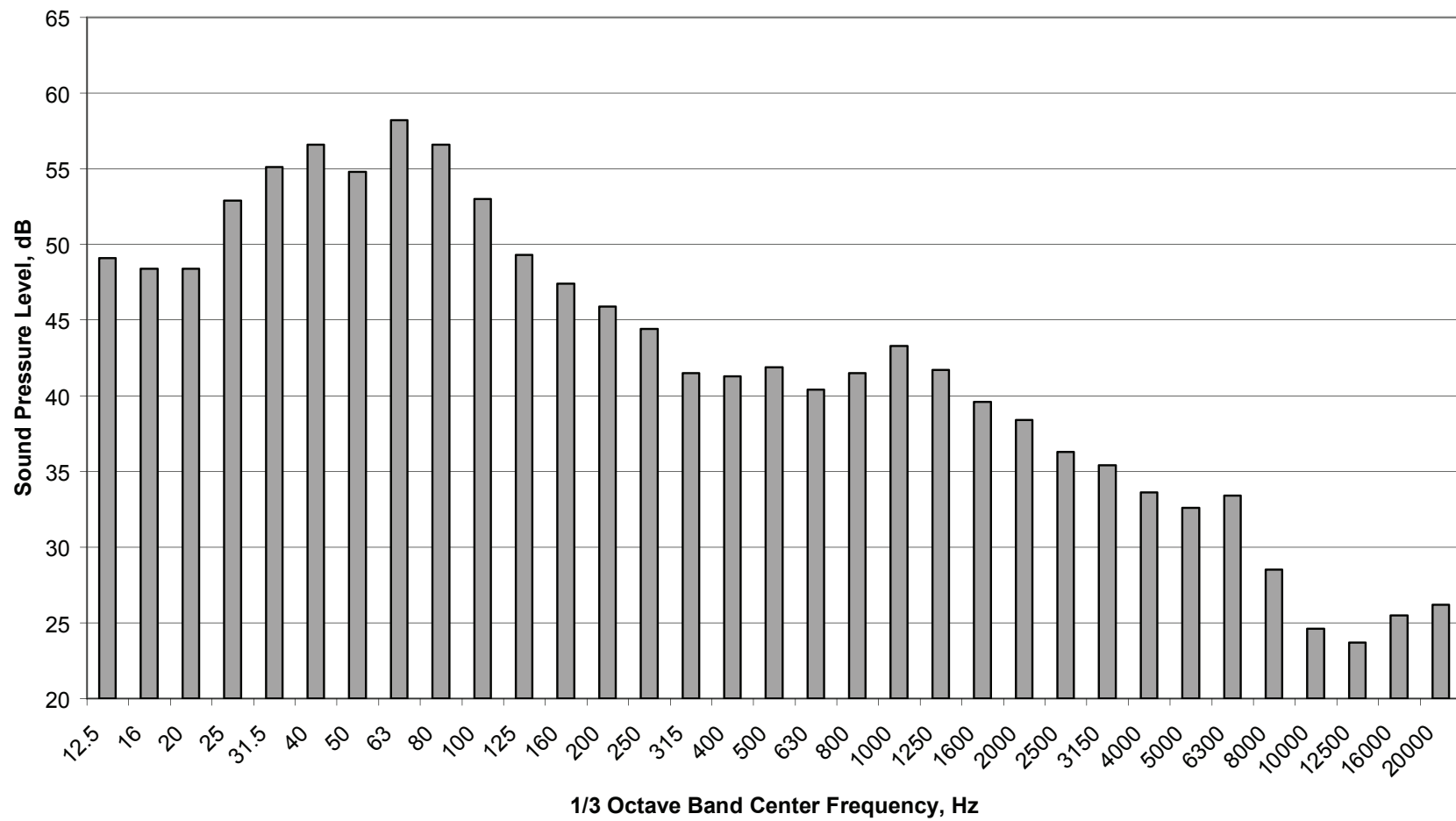
The Proposed Project would include a lift station with a pump located below grade inside a covered wet well. To quantify the noise levels due to such a pump station, noise measurements were conducted at the Beanwood lift station, located as shown by **Figure 3.6-1**. The average measured noise level at a distance of 6 feet from the well cover was about 51 dBA, based upon two samples. **Figure 3.6-4** shows the measured frequency content of the sample. Nearby traffic caused low frequency tones; the pump caused a slight increase in sound pressure levels at 1,000 Hz.

Standard noise modeling assumptions for spherical spreading, air absorption and ground absorption were used to predict the noise levels due to the lift station operation as received at the nearest residence. The background nighttime noise level is 44 dBA. The predicted noise level due to the lift station was estimated at 19 dBA, and the predicted cumulative noise levels after accounting for ambient noise levels during typical nighttime hours was estimated at 44 dBA.

Therefore, noise associated with the lift station project would not affect ambient noise levels at the nearest residences as compared to existing conditions. Using the Sonoma County and FICON criteria, the predicted changes in ambient noise levels due to the project would be *less than significant*.

### Mitigation Measure

No mitigation is required.





## 3.7 TRANSPORTATION AND CIRCULATION

### 3.7.1 INTRODUCTION

This section addresses the potential for the Proposed Project to impact the traffic flow within the surrounding roadway network. Following an overview of the existing traffic setting in **Subsection 3.7.2** and the relevant regulatory setting in **Subsection 3.7.3**, project-related impacts and recommended mitigation measures are presented in **Subsection 3.7.4**.

### 3.7.2 EXISTING SETTING

#### *EXISTING ROADWAY NETWORK*

The roadway network in the project area consists of one state highway and local roads. The Russian River Area has an extensive roadway network in the resort corridor surrounding the Russian River, although many of the roads are very narrow and do not meet modern standards.

#### *State Highways*

*State Route (SR) 116* is a two-lane highway that originates off Highway 1, approximately 1 mile south of Jenner. SR 116 traverses east to Guerneville where it heads southeast ending in Cotati, outside Rohnert Park. Approximately 28 miles of SR 116, from HWY 1 to Sebastopol, is designated as a scenic highway. SR 116 passes by the project site approximately 1 mile to the northeast. In the Russian River area, SR 116 is classified as a Rural Principal Arterial with a roadway capacity of 1,600 cars per hour (Sonoma County, 2006). At Armstrong Woods Road in Guerneville, SR 116 has an average daily trip (ADT) volume of 11,900 for west bound traffic and an ADT volume of 8,400 for eastbound traffic. Average peak hour trips volumes are 1,050 for westbound traffic and 850 for eastbound traffic (Caltrans, 2005).

#### *Local Roads*

*River Road* originates at SR 116 in Guerneville and continues east along the north side of the Russian River. River Road is designated as an urban principal arterial and a rural principal arterial by the General Plan. This roadway is an alternative east-west arterial in the project area providing access to Hwy 101 and the City of Santa Rosa.

*Neeley Road*, which originates off SR 116 in Guerneville, is the main roadway providing access to the project site and is designated as an urban minor collector in the Sonoma County General Plan (relevant sections summarized below). The majority of Neeley Road is a two-lane road. However, certain segments of Neeley Road permit only one vehicle at a time in transit. Currently, maintenance repairs are being made to several locations along the roadway that have been damaged due to local flood events.

The following local roads are located along Neeley Road:

- Guernewood Road
- Orchard Avenue
- River Lane
- Montesano Avenue
- Beach Avenue
- Benson Road

The roadways identified above are narrow two lane undivided roads providing local access to the Vacation Beach residential area from Neeley Road.

### ***PUBLIC TRANSIT***

Sonoma County Transit (SCT) provides fixed-route service within the Russian River area. Service to the area is provided by Route 20, which services Graton, Forestville, Mirabel Heights, Rio Nido, Guerneville, and Sebastopol along River Road and SR 116 (SCT, 2007). The main transfer station for service to the project corridor is in Santa Rosa on 2nd Street. Route 28 provides local service between Monte Rio and Guerneville, including the Vacation Beach area on Neeley Road. Route 28 service is Monday through Friday only, no Saturday or Sunday service.

In addition, two Para-transit services (Sonoma County Para-transit and Whistlestop Wheels) provide service in the project area. Para-transit services operate on demand and provide curb-to-curb transportation for individuals with disabilities (SCT, 2004).

### ***BICYCLE AND PEDESTRIAN CIRCULATION***

Bicycle facilities include bike paths, bike lanes, and bike routes; also known respectively as Class I, Class II, and Class III bikeways. Class I bike paths are paved trails that are separated from the roadways. Class II bike lanes are lanes on roadways that are designated for use by bicycles by striping, pavement legends, and signs. Class III bike routes are roadways that are designated for bicycle use with signs, but no separate lane width. Within the vicinity of the Proposed Project area, there is an existing Class I bike path starting at SR 116 in Forestville and running approximately 2.5 miles to the south.

The Countywide Bicycle Advisory Committee supports bicycle- and pedestrian- related development in the project area and the surrounding vicinity. The Sonoma County Transit Authority's (SCTA) Comprehensive Transportation Plan indicates that there is a proposed Class II bike lane on River Road east of Guerneville and Highway 116 west of Guerneville, a proposed Class II bike lane on Mirabel Road from Highway 116 to River Road in Forestville, and a proposed Class III bike route on Armstrong Woods Road at Highway 116/River Road in Guerneville (SCTA, 2007). There are no bikeways existing or proposed on Neeley Road.

Pedestrian facilities include some sidewalks in the city of Guerneville, but mainly the project area consists of county roads with dirt shoulders. No sidewalks exist along Neeley Road.

### **3.7.3 REGULATORY SETTING**

Regulation of the project area roadway network falls under the jurisdiction of state and local agencies. These agencies are described below.

#### ***CALTRANS***

The California Department of Transportation (Caltrans) manages interregional transportation, including management and construction of the California highway system. In addition, Caltrans is responsible for permitting and regulation of state roadways. The project area includes one roadway that falls under Caltrans' jurisdiction (SR 116).

Caltrans' construction practices require temporary traffic control planning "during any time the normal function of a roadway is suspended" (FHWA, 2003). In addition, Caltrans requires that permits be obtained for transportation of oversized loads, transportation of certain materials, and for construction-related traffic disturbances. Caltrans regulations would apply to transportation of construction crews and construction equipment throughout the project area (Caltrans, 2004).

#### ***SONOMA COUNTY***

Several of the roads in the project corridor are under the jurisdiction of Sonoma County. County policies and regulations regarding the design, use, or obstruction of roadways are detailed in the Sonoma County General Plan Circulation and Transit Element. The majority of these goals and policy guidelines in the Circulation and Transit Element pertain to the development and planning of roadways and transit systems and therefore are not relevant to the Proposed Project.

The 2001 Countywide Transportation Plan for Sonoma County provides further guidance for transportation planning and associated goals and policies (SCTA, 2004). This plan is currently being updated and is available in draft form. This plan focuses on the design and implementation of improvements to the county circulation system, including roadways, bikeways, and rail service. The plan does not include policies relevant to the Proposed Project.

#### ***Sonoma County General Plan 2020 – Circulation and Transit Element***

Sonoma County is currently in the process of updating its General Plan. The updated document would replace the existing General Plan, which was adopted in 1989. In January 2006, the County released a Public Hearing Draft of the General Plan 2020. The Public Hearing Draft outlines Traffic and Transit policies that may impact the environment within the General Plan planning area, which includes the project site (Sonoma County, 2006). A majority of the policies outlined in the Circulation and Transit Element of the General Plan 2020 are related to roadway development and planning and therefore do not

pertain to the Proposed Project. Below are the recommended policies from the General Plan 2020 that relate to implementation of the Proposed Project:

- Policy CT-3e** Implement safety improvements when and where problems arise. Where safety problems may result from a proposed project, require the safety improvements as a condition of approval.
- Objective CT-3.1** Maintain a "C" level of service or better on roadway segments unless a lower level of service has been adopted.
- Objective CT-3.2** Maintain a "D" level of service or better at roadway intersections.
- Objective CT-3.3** Allow the above levels of service to be exceeded if it is determined to be acceptable due to environmental or community values, or if the project(s) which would cause the lower level of service has an overriding public benefit that outweighs the increased congestion that would result.

### **3.7.4 IMPACTS AND MITIGATION MEASURES**

#### ***SIGNIFICANCE CRITERIA***

Impacts to the existing roadway network would be considered significant if the Proposed Project would:

- Cause an increase in traffic, that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase on either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections),
- Exceed, either individually or cumulatively, a level of service (LOS) standard established by the county congestion management agency for designated roads or highways,
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment),
- Result in inadequate emergency access,
- Result in inadequate parking capacity, and/or
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

#### ***ANALYSIS METHODOLOGY***

This section identifies any impacts that the Proposed Project may have on the existing roadway network. Impacts to transportation and circulation were analyzed based on examination of the existing roadway network, anticipated traffic resulting from construction and operation of the Proposed Project, and comparison of these factors to the significance criteria listed above. If significant impacts are likely to

occur, mitigation measures are included to increase the compatibility and safety of the Proposed Project and reduce impacts to less-than-significant levels. Impacts associated with significance criteria that were determined to be less than significant in the Initial Study (**Appendix A**) do not warrant further analysis in accordance with CEQA Guidelines, and are not discussed within this EIR.

The Proposed Project would not generate long-term changes in traffic. Maintenance of the equalization basin would require routine maintenance trips, inspection, and vegetation management activities. However, maintenance activities would not increase traffic above existing levels required to maintain the existing facilities. Therefore, operation of the Proposed Project would not exceed a LOS standard for affected roadways or result in inadequate parking capacity. Potential traffic and transportation effects of the Proposed Project would be confined to those generated by construction activities.

### ***IMPACTS AND MITIGATION MEASURES***

#### **Impact**

#### **4.7.1 During construction of the Proposed Project, large vehicle traffic would increase compared to the existing traffic load on SR-116 and Neeley Road. The temporary increase in traffic on Neeley Road Could result in inadequate private, public, and municipal access to the surrounding community. Less than Significant with Mitigation.**

The Proposed Project would not introduce any uses that would generate long-term changes in traffic. Construction of the Proposed Project would temporarily increase traffic along haul routes, including SR116 and Neeley Road, the main access roads to the WWTP property. It is projected that during the construction period, approximately 46 round trips (92 one-way truck trips) per day would be required for the import and export of materials for a period of approximately 20 weeks. Primary impacts from construction-related trucks deliveries would include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. SR-116 is a two-lane principal arterial with sufficient roadway capacity to accommodate the temporary increase in traffic resulting from the Proposed Project. Therefore, construction-related traffic impacts along this roadway, including those to public transit and pedestrian circulation, would be considered less than significant. However, given the width constraints and existing conditions along Neeley Road, the increase in traffic associated with the construction of the Proposed Project could impact private and public traffic flow to the Vacation Beach residential area, resulting in delayed access to residences and businesses. Additionally, bus routes and emergency access along Neeley Road may be impeded. This is considered a *potentially significant* impact.

### Mitigation Measures

- 3.7-1a** The District shall notify public transportation providers, including affected school districts and Sonoma County Transit, at least one month prior to commencement of construction to minimize construction-related traffic delays to bus routes along Neeley Road. The dates and times of bus routes shall be identified, and construction-related truck trips along Neeley Road will be minimized or avoided during these times to the greatest extent feasible.
- 3.7-1b** Emergency service providers such as the Sonoma County Sheriff's Department, California Highway Patrol, and applicable local police and fire departments will be notified at least one month prior to commencement of construction. Emergency service providers shall be notified of the timing, location, and duration of construction activities. All roads shall remain passable to emergency service providers at all times.
- 3.7-1c** The District shall notify all potentially impacted private residents located along Neeley Road, Guernwood Road, Orchard Avenue, River Lane, Montesano Avenue, Beach Avenue, and Benson Road at least one month prior to commencement of construction. The written notification shall include the construction schedule and a telephone number for receiving questions and complaints. Access to private residents shall be maintained at all times.
- 3.7-1d** Construction related truck trips shall be limited to the hours between 9:00 a.m. to 3:00 p.m., Monday through Friday to the extent possible. No construction traffic shall be permitted between the hours of 10 pm. to 7 a.m.
- 3.7-1e** Construction traffic shall comply with the California Vehicle Code (CVC) sections related to vehicle weight and width.

### Significance After Mitigation

Implementation of the recommended mitigation measures would reduce potential impacts associated with construction-related traffic by limiting truck deliveries to non-peak hour traffic times, and ensuring coordination with public transportation providers, emergency service providers, and private residences. With mitigation, public and private access to the Vacation Beach residential area would be maintained, and delays avoided during peak traffic hours. Therefore, with mitigation this impact is expected to be *less than significant*.

### Impact

- 4.7.2 The temporary increase in large vehicle traffic related to construction activities of the Proposed Project could result in accelerated deterioration of portions of Neeley Road. Less than Significant with Mitigation.**

The Proposed Project would not change the design of existing roadways and does not include any operational features that would impact traffic or increase hazards. However, large truck traffic associated with the import of material for the construction of the basin could accelerate the deterioration of the roadway surface due to the high number of trips. It is projected that during the construction period, approximately 46 round-trip truck trips per day (92 one-way) would be required for the import of materials Monday through Friday for a period of approximately 20 weeks. This would result in a total of 4,600 round-trip truck trips for the project (9,200 one way). Further deterioration of Neeley Road could result in safety hazards due to the already poor conditions of this roadway. This is considered a *potentially significant* impact.

### **Mitigation Measure**

#### **3.7-2a Implement Mitigation Measure 3.7-1e.**

### **Significance After Mitigation**

Implementation of recommended mitigation measures would ensure compliance with regulations intended to minimize adverse impacts to roadways. Therefore, after mitigation, potential impacts associated with deterioration of Neeley Road would be *less than significant*.

### **Impact**

#### **3.7-3 Construction activities may temporarily decrease the existing LOS of affected roadways. Less than Significant.**

Objective CT-3.1 of the Sonoma County General Plan requires maintaining a LOS of C or better on roadway segments unless a lower level of service is designated, and Objective CT-3.2 requires maintaining a LOS of D or better at roadway intersections. Temporary increases in traffic resulting from construction activities associated with the Proposed Project could decrease the LOS on SR 116, and Neeley Road, below acceptable thresholds. However, impacts would be temporary. Upon completion of construction, the LOS along affected roadways would return to its original level. Furthermore, Objective CT-3.3 states that LOS standards may be exceeded if it is determined that the project has an overriding public benefit that outweighs the increased congestion that would result. Because the project would have long-term public benefits associated with the reduced potential for discharge violation at the WWTP, and construction traffic would be temporary, this impact is considered *less than significant*.

### **Mitigation Measures**

None required.



## 3.8 AIR QUALITY

### 3.8.1 INTRODUCTION

This section addresses the potential for the Proposed Project to impact air quality surrounding the project site. Following an overview of the existing air quality setting in **Subsection 3.8.2** and the relevant regulatory setting in **Subsection 3.8.3**, project-related impacts and recommended mitigation measures are presented in **Subsection 3.8.4**.

### 3.8.2 EXISTING SETTING

The project area is located within the North Coast Air Basin (Basin), which includes northern Sonoma County along with Del Norte, Humboldt, and Mendocino counties. The project site is located within the portion of the North Coast Air Basin monitored by the Northern Sonoma County Air Pollution Control District (NSCAPCD). Marine winds and coastal fogs characterize the regional climate of the project site. Temperature inversions (warm air trapping cooler air near the surface) occur frequently in the region, particularly during fall and winter seasons. Winds typically generate from the south during spring, summer, and fall and generate out of the northwest during winter. Wind speeds are highest during spring and lowest during fall. The regional temperature averages in the low 70s (Fahrenheit) for highs and the middle 40s (Fahrenheit) for lows. Precipitation averages approximately 30 inches per year (1931 to 2005) (Western Regional Climate Center, 2006).

#### *LOCAL AIR QUALITY CONDITIONS*

The United State Environmental Protection Agency (USEPA) has identified six criteria air pollutants (CAPs) that are both common and detrimental to human health. These CAPs and are used as indicators of regional air quality. The six CAPs include: ozone (O<sub>3</sub>), carbon monoxide (CO), particulate matter (PM<sub>10</sub>), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), and lead (Pb). The area monitored by the NSCAPCD, including the project site, is in attainment (or unclassified) for National Ambient Air Quality Standards (NAAQS) established for the six CAPs (**Table 3.8-1**). Additionally, the NSCAPCD is considered in attainment (or unclassified) for most of the California Ambient Air Quality Standards (ozone, carbon monoxide, fine particulate matter, nitrogen dioxide, sulfur dioxide, lead, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles) (**Table 3.8-1**). The NSCAPCD is classified under California standards as non-attainment for particulate matter. Criteria air pollutants (CAPs) of concern are described below.

#### *Ozone*

The largest source of ground-level ozone is reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO<sub>x</sub>), the main source being from the incomplete combustion of fossil fuels. These ozone precursors react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer

air pollution problem and often the effects of the emitted ROG and NO<sub>x</sub> is felt a distance downwind of the emission sources. Ozone is subsequently considered a regional pollutant, as the reactions forming it take place over time, and downwind from the sources of the emissions. As a photochemical pollutant, ozone is formed only during daylight hours under appropriate conditions, but is destroyed throughout the day and night. Thus, ozone concentrations vary depending upon both the time of day and the location.

**TABLE 3.8-1**  
ATTAINMENT STATUS FOR NSAPCD

Pollutant	State Status	Federal Status
Ozone (O <sub>3</sub> ) - 1- hour	Attainment	—
Ozone (O <sub>3</sub> ) - 8- hour	—	Unclassified /Attainment
Respirable Particulate Matter (PM <sub>10</sub> )	Non-attainment	Attainment
Fine Particulate Matter (PM <sub>2.5</sub> )	Attainment	Unclassified/Attainment
Carbon Monoxide (CO)	Unclassified	Unclassified/Attainment
Sulfur Dioxide (SO <sub>2</sub> )	Attainment	Unclassified
Nitrogen Dioxide (NO <sub>2</sub> )	Attainment	Unclassified/Attainment
Lead (Pb)	Attainment	—

Source: CARB, 2006

### ***Carbon Monoxide***

Carbon monoxide (CO) is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Other non-road engines and vehicles, such as construction equipment and boats, contribute about 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. CO is described as having only a local influence because it dissipates quickly. High CO concentrations occur in areas of limited geographic size, sometimes referred to as hot spots. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion, active parking lots, and in automobile tunnels. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

### ***Particulate Matter***

Particle pollution is a mixture of microscopic solids and liquid droplets suspended in the air. This pollution, also known as particulate matter, is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores).

### ***Nitrogen Dioxide***

Nitrogen dioxide (NO<sub>2</sub>) is a brownish, highly reactive gas that is present in all urban environments. The major artificial sources of NO<sub>2</sub> are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO<sub>2</sub>. The combined emissions of NO and NO<sub>2</sub> are referred to as NO<sub>x</sub>, which are reported as equivalent NO<sub>2</sub>. Because NO<sub>2</sub> is formed and depleted by reactions associated with photochemical smog (ozone), the NO<sub>2</sub> concentration in a particular geographical area may not be representative of the local NO<sub>x</sub> emission sources.

### ***Other Criteria Air Pollutants***

The standards for CAPs such as sulfur dioxide (SO<sub>2</sub>) and lead are either being met or are unclassified throughout the country. Many of the sources for these CAPs have either been eliminated or industry standard source pollution control techniques have dramatically reduced emissions. For example, lead has been removed from gasoline, coal-fueled power plants have improved stack-scrubbing technology prior to emissions (SO<sub>2</sub>), and low-sulfur diesel fuel is being required throughout the county. The latest pollutant trends suggest that these standards will not be exceeded in the foreseeable future.

### ***SENSITIVE RECEPTORS***

Sensitive receptors are generally defined as land uses that house people who are susceptible to experience adverse impacts from air pollution emissions, and as such, should be given special consideration when evaluating air quality impacts from projects. Sensitive receptors include facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. Sensitive receptors in the vicinity of project site include residential housing located along Neeley Road to the west of the project site. The nearest residential home is located approximately 275 feet from the project area on the north side of Neeley Road.

## **3.8.3 REGULATORY SETTING**

### ***FEDERAL REGULATION***

The Federal Clean Air Act (FCAA) forms the basis for the national air pollution control program. Basic elements of the FCAA and amendments include identifying CAPs, establishing corresponding national ambient air quality standards (NAAQS), and requiring state implementation plans (SIPs) to establish state compliance with NAAQS. USEPA is the Federal agency charged with administering the FCAA and other air quality-related legislation. The USEPA delegates authority for implementation of the FCAA requirements to states, however maintains program approval.

### ***National Ambient Air Quality Standards***

The USEPA has established maximum concentrations for the six CAPs, which are known as national ambient air quality standards (NAAQS). Concentrations above these time-averaged limits are anticipated to cause adverse health affects to sensitive individuals (children, elderly, immunocompromised individuals, and those with respiratory ailments). The FCAA established primary and secondary NAAQS. Primary standards set limits to protect public health, while secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. For some of the criteria pollutants, more than one averaging time standard has been identified in order to address the typical exposures found in the environment. Although NAAQS are ceiling limits, the USEPA has established violation criteria for each CAP. For example, in order to constitute a violation, the NAAQS for ozone must be exceeded on more than three days in three consecutive years. On the other hand, if the NAAQS for CO are in exceeded on more than one day in any given year, then a violation has occurred. Refer to **Table 3.8-2** for the NAAQS.

### ***Federal Attainment Status***

Pursuant to the amendments to the FCAA, USEPA has classified air basins, or portions thereof, as either “attainment” or “non-attainment” for each criteria air pollutant, based on whether or not the primary NAAQS have been achieved. Nonattainment areas must take steps towards attainment by a specific timeline. These steps are consolidated within the State Implementation Plan (SIP) as mandated by the FCAA. The SIP is a number of documents that set forth the State’s strategies for achieving Federal air quality standards. The Code of Federal Regulations lists all of the items that are included in the SIP. The SIP is not a single document, but a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, State regulations, and Federal controls. Although a state may be classified by the USEPA as non-attainment, specific air basins within the state may achieve the NAAQS. These basins are not required to submit plans for incorporation into the SIP.

Pursuant to the FCAA, the area monitored by the NSCAPCD, including the project site, is in attainment (or unclassified) for NAAQS established for the six CAPs (ozone, particulate matter, carbon monoxide, nitrogen dioxide, lead, and sulfur dioxide) (**Table 3.8-1**). Therefore, based on the attainment status, the NSCAPCD is not a participating party of the State Implementation Plan for State conformity with the NAAQS.

### ***STATE REGULATION***

#### ***California Clean Air Act***

In 1988, the State legislature adopted the California Clean Air Act (CCAA), which established a statewide air pollution control program. The CCAA's requirements include annual emission reductions, development and use of low emission vehicles, setting the California ambient air quality standards (CAAQS), and submittal of air quality attainment plans by air districts. The California Air Resources Board (CARB) is the State agency responsible for coordinating both State and Federal air pollution

control programs in California. California's SIP is comprised of the State's efforts to attain the NAAQS as well as plans developed at the regional or local level. CARB approves local air quality management plans (AQMPs) and air pollution control district (APCD), which also address attainment and maintenance of CAAQS as mandated by the CCAA. Local air quality plans are required for implementation into the SIP, if the specific air basin is classified as non-attainment for any NAAQS or CAAQS, except for PM<sub>10</sub>. An air basin does not have to establish an air quality plan for exceedance of air quality standards for PM<sub>10</sub>. However, reductions of PM<sub>10</sub> are typically mandated through the use of Best Management Practices (BMPs) for activities that may cause high PM<sub>10</sub> emissions, such as construction. The CAAQS concentrations are presented in **Table 3.8-2**. CARB also coordinates and approves local plans that eventually become part of the SIP for submittal to the EPA.

**TABLE 3.8-2**  
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	National Standard	California Standard <sup>c</sup>
		Concentration	Concentration
Ozone (O <sub>3</sub> )	1 Hour	No Standard	0.09 ppm <sup>a</sup>
	8 Hour	0.08 ppm	0.070 ppm
Carbon Monoxide (CO)	8 Hour	9 ppm	9.0 ppm
	1 Hour	35 ppm	20 ppm
Nitrogen Dioxide (NO <sub>2</sub> )	Annual	0.053 ppm	No Standard
	1 Hour	No Standard	0.25 ppm
Sulfur Dioxide (SO <sub>2</sub> )	Annual	0.030 ppm	No Standard
	24 Hour	0.14 ppm	0.04 ppm
	1 Hour	No Standard	0.25 ppm
	3 Hour	0.5 ppm	No Standard
Respirable Particulate Matter (PM <sub>10</sub> )	Annual	50 µg/m <sup>3</sup>	20 µg/m <sup>3</sup>
	24 Hour	150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
Fine Particulate Matter (PM <sub>2.5</sub> )	Annual	15 µg/m <sup>3</sup>	12 µg/m <sup>3</sup>
	24 Hour	65 µg/m <sup>3</sup>	No Standard
Lead (Pb)	30 day	No Standard	1.5 µg/m <sup>3</sup>
	Calendar Quarter	1.5 µg/m <sup>3</sup>	No Standard
Sulfates (SO <sub>4</sub> )	24 hour	No Standard	25 µg/m <sup>3</sup>
Hydrogen Sulfide (H <sub>2</sub> S)	1 hour	No Standard	0.03 ppm
Vinyl Chloride	24 hour	No Standard	0.01 ppm

Notes:

a ppm = parts per million

b µg/m<sup>3</sup> = micrograms per cubic meter

c California ambient air quality standards (CAAQS) for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and particulate matter – PM<sub>10</sub>, PM<sub>2.5</sub> are values that are not to be exceeded. All others are not to be equaled or exceeded.

Source: CARB, 2006; AES, 2006

***Global Warming Solutions Act (AB 32)***

Adopted by the state legislature in August 2006, AB 32 requires that California's greenhouse gas emissions be reduced to 1990 levels by the year 2020. This reduction will be accomplished through an enforceable statewide cap on emissions of carbon dioxide, methane and other heat trapping pollutants that will be phased in beginning in 2012. In order to effectively implement the cap, AB 32 requires CARB to develop and adopt regulations that would require reporting and verification of the statewide greenhouse gas emissions. Monitoring and enforcement of the program will also be the responsibility of CARB. It is anticipated that these standards will be developed and approved in 2009; however, regulations would not become effective until 2012. Currently, there are no established thresholds and no means of compliance with reduction goals for greenhouse gas emissions. Because reduction goals have yet to be adopted, there is currently no consistent or accepted means of determining whether a project will exceed established CEQA thresholds of significance for air quality with regards to greenhouse gas emissions. Potential impacts from greenhouse gas emissions as a result of the project are addressed in the discussion of cumulative air quality impacts included as **Section 4.2.2**.

***LOCAL REGULATION******North Sonoma County Air Pollution Control District (NSCAPCD).***

Local air quality regulations are under the purview of the local air district in this region, which is the NSCAPCD. As required by the CCAA and the FCAA, the NSCAPCD is responsible for air monitoring, permitting, enforcement, long-range air quality planning, regulatory development, education, and public information activities related to air pollution in North Coast region. California Health and Safety Code Sections 39002, *et seq.* and 40000, *et seq.* require local districts to be the primary enforcement mechanism for air pollution control. Districts must have rules and regulations for the implementation and enforcement for the attainment and maintenance of federal and state ambient air standards.

Because the NSCAPCD is in attainment or unclassified for all NAAQS, as noted in **Section 3.8.2**, and for all CAAQS, except for PM<sub>10</sub>, an air quality plan contingent with the California SIP and CCAA is not required, and therefore the District has not prepared one.

The NSCAPCD established Rule 400, which states that contaminants shall not be emitted from a source in such a level that the District receives a significant number of odor complaints. The exact number of complaints necessary to constitute a nuisance is not defined by the Rule, however the District defines a nuisance as more than two complaints, and the odor must be verifiable by the air district upon inspection.

***Sonoma County General Plan***

The Sonoma County General Plan (General Plan) outlines air quality policies within the Resource Conservation Element that regulate development within the General Plan planning area, which includes the project site. Policies that may relate to the Proposed Project include:

- Policy RC-13b** Encourage public transit, ridesharing and van pooling, shortened and combined motor vehicle trips to work and services, use of bicycles, and walking. Minimize single passenger motor vehicle use.
- Policy RC-13c:** Refer projects to the local air quality districts for their review.

Sonoma County is currently in the process of updating its General Plan. The following policy changes that relate to air quality are proposed within the General Plan 2020:

- Goal OSRC-16** Preserve and maintain good air quality and provide for an air quality standard that will protect human health and preclude crop, plant and property damage in accordance with the requirements of the Federal and State Clean Air Acts.
- Objective RC-16.1** Minimize air pollution.
- Objective RC-16.2** Encourage reduced motor vehicle use as a means of reducing resultant air pollution.
- Policy RC-16a** Require that commercial and industrial development projects be designed to minimize air emissions. Reduce direct emissions by decreasing the need for space heating.
- Policy RC-16c** Refer projects to the local air quality districts for their review.

### 3.8.4 IMPACTS AND MITIGATION MEASURES

#### *SIGNIFICANCE CRITERIA*

The significance criteria listed below are utilized to determine the magnitude of air quality impacts. Impacts are considered significant if the Proposed Project would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase in any CAP for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; and/or
- Create objectionable odors affecting a substantial number of people.

#### *ANALYSIS METHODOLOGY*

This section identifies any impacts that the Proposed Project may have on air quality. Impacts to air quality were analyzed based on an examination of the project site and published information regarding air



quality of the project area and comparison of these factors to the significance criteria listed above. If significant impacts are likely to occur, mitigation measures are included to increase the compatibility and safety of the Proposed Project and reduce impacts to less-than-significant levels. Impacts associated with significance criteria that were determined to be less than significant in the Initial Study (**Appendix A**) do not warrant further analysis in accordance with CEQA Guidelines, and are not discussed within this EIR.

## ***IMPACTS AND MITIGATION MEASURES***

### ***Construction Impacts***

#### **Impact**

#### **3.8-1 Construction of the Proposed Project would generate PM<sub>10</sub> emissions. The air basin currently violates the CAAQS for PM<sub>10</sub>. Less than Significant with Mitigation.**

Construction activities associated with the Proposed Project will generate fugitive dust and diesel exhaust emissions from construction/excavation activities and vehicle/equipment operation. Fugitive dust and diesel exhaust are regulated under the broad category particulate matter of 10-micrometer diameter or less (PM<sub>10</sub>). The Proposed Project includes infill of approximately 32,000 cubic feet of soil. This would require approximately 32 round trip truck trips per day for approximately 20 weeks. Furthermore, with the existing slope of the project site, a portion of the equalization basin would be excavated and the remainder of the project site graded to provide the necessary contours for wastewater storage.

As discussed above, the NSCAPCD does not have specific attainment plans for PM<sub>10</sub>. Furthermore, the NSCAPCD has not established significant thresholds for construction activities relating to the release of PM<sub>10</sub> and therefore does not require quantification of potential emissions from construction sites. The NSCAPCD has elected to require projects to mitigate construction-related emissions through the implementation of BMPs. Although not explicitly outlined, the NSCAPCD has identified the BMPs recommended in the Bay Area Air Quality Management District's (BAAQMD) *BAAQMD CEQA Guidelines* (December, 1999) as sufficient in meeting the NSCAPCD's goals including PM<sub>10</sub> emission reductions. The BAAQMD recommended BMPs establish control measures that should be implemented on all construction sites to reduce PM<sub>10</sub> emissions. For projects greater than 4 acres, the BAAQMD recommends enhanced control measures. The area of disturbance for the Proposed Project would be below the recommended threshold for instituting enhanced control measures. This *potentially significant* impact will therefore be reduced to a *less than significant* level with implementation of the BAAQMD recommended BMPs listed in the mitigation measure below.

#### **Mitigation Measure**

#### **3.8-1 The following BMPs shall be implemented during construction of the Proposed Project:**

- Water all active construction areas at least twice daily,

- Cover all trucks hauling soil and other loose materials or require all trucks to maintain at least 2 feet of freeboard,
- Apply water as needed on a daily basis, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites,
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites,
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets,
- Maintain equipment according to the manufacturers specifications,
- Restrict idling of construction equipment and vehicles to 10 minutes, and
- Gasoline powered equipment and vehicles shall have catalytic converters installed prior to their use on the project site.

### Significance After Mitigation

During construction of the Proposed Project, implementation of BMPs suggested by the Bay Area Air Quality Management District would sufficiently meet the NSCAPCD's goals for reduction of PM<sub>10</sub> emissions. Therefore, after mitigation this impact would be *less than significant*.

### Operational Impacts

#### Impact

#### **3.8-2 Operation of the Proposed Project may generate odors that may constitute a nuisance according to Rule 400 of the NSCAPCD. Less than Significant.**

Use of the equalization basin to store untreated or partially treated wastewater could lead to objectionable odors during conditions of air inversions in the area, causing odors to waft downhill towards the Vacation Beach residential community. In past years, the WWTP has received complaints regarding odors emanating from the facility towards the residences in the Vacation Beach Community. Complaints are typically received during summer months when inversion layers are their strongest and odor is not able to dissipate through the atmosphere (Cullen, 2006). The equalization basin would be used to store treated and untreated wastewater. It is anticipated that the storage of untreated or partially treated wastewater in the basin would typically occur during winter months, due to higher levels of influent during rain events. This use would generate the greatest source of odors from the equalization basin. Use of the equalization basin for the storage of untreated wastewater would occur during storm events, when climatologic features would prevent odors from reaching the community through rain and wind dilution. Utilization of the equalization basin for the storage of tertiary treated recycled water during the reclamation season would not produce odors beyond those currently generated by District's facility. Therefore, the project would not produce objectionable odors that would impact a substantial number of people. Accordingly, this impact is *less than significant*.

**Mitigation Measure**

No mitigation is required.

**Impact****3.8-3 Operation of the Proposed Project could result in air emissions from the powering of the proposed pumps and from maintenance/repair trips. Less than Significant.**

Potential emissions sources resulting from operation of the Proposed Project include emissions from powering of the pump station and emissions associated with maintenance/repair trips. The proposed pump station would be powered by the existing electrical grid and would not generate local emissions. Emissions may be generated at a distant power plant where the power is created. The Proposed Project's pump station would not require significant electrical capacity and would not be responsible for a substantial amount of electrical emissions at the power source. In addition, power plant emissions are subject to the Rules and Regulations of the air district in which they are located and are subject to their own CEQA review.

Operation of the equalization basin would include routine maintenance trips and inspection activities. The number of workers required for maintenance and operational activities would not increase above existing levels and therefore, would not result in an increase in air pollutants due to traffic in the Proposed Project area. The effect of project-related traffic on local CO concentrations along roadways and at intersections would also be negligible.

**Mitigation Measure**

No mitigation required.